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Quick-Starting Routers

NORTEL NETWORKS™

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Preface

If you are responsible for activating a Nortel Networks™ router on an IP network, this guide can help you to configure the router's initial network interface. When you complete the Quick-Start installation procedure, the router will actively route IP traffic on your network.

You can use the Quick-Start installation script or the Bay Command Console (BCC™) to configure the initial IP interface over Ethernet on Nortel Networks routers running BayRS™. In this guide, you will find instructions for using both the BCC and the Quick-Start installation script to quick-start a router.

This guide also provides information about securing your router and instructions for installing the Site Manager configuration tool on a PC or workstation.

The procedures in this guide are intended primarily for new installations, but they are also used in the upgrade procedure. Before using this book as part of an upgrade, see the upgrade guide.

Before You Begin

Before using this guide, you must complete the following procedures:

- Install the router (see the installation guide that came with the router):
  - -- *Installing and Maintaining BN Routers*
  - -- *Installing and Maintaining ASN Routers*
  - -- *Installing and Operating BayStack AN and ANH Routers*
  - -- *Installing and Operating BayStack ARN Routers*
  - -- *Quick Installation and Reference for the System 5000 Net Modules*
- Review the Release Notes and Read Me First documents for any changes to the Quick-Start instructions.

Following are other considerations for using Quick-Start:

- For specific booting and installation script procedures for BayStack™ Access Node (AN®), Access Node Hub (ANH™), and Advanced Remote Node™ (ARN™) routers, see *Configuring BayStack Remote Access*.
- For Access Stack Node (ASN™) network booting information, see *Connecting ASN Routers to a Network*. For ASN local booting requirements, such as using the **bconfig config local** and **boot** commands to allow the ASN to use its local configuration file, see *Installing and Maintaining ASN Routers*.

ASN Terminology

ASN routers use unique terminology to identify the location of their connectors. Four ASN nodes can be stacked together as a single router. You assign a slot number to each node using a dial on its rear panel. Each slot has four module positions where the net modules reside. You identify connector position by first specifying the slot and module numbers. For more information, see *Installing and Maintaining ASN Routers*.

Text Conventions

This guide uses the following text conventions:

angle brackets (< >)	Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command. Example: If the command syntax is: **ping** <*ip_address*>, you enter: **ping 192.32.10.12**
bold text	Indicates command names and options and text that you need to enter. Example: Enter **show ip** {**alerts** | **routes**}. Example: Use the **dinfo** command.

braces ({})	Indicate required elements in syntax descriptions where there is more than one option. You must choose only one of the options. Do not type the braces when entering the command. Example: If the command syntax is: **show ip** {**alerts** | **routes**}, you must enter either: **show ip alerts** or **show ip routes**, but not both.
brackets ([ ])	Indicate optional elements in syntax descriptions. Do not type the brackets when entering the command. Example: If the command syntax is: **show ip interfaces** [**-alerts**], you can enter either: **show ip interfaces** or **show ip interfaces -alerts**.
ellipsis points (. . .)	Indicate that you repeat the last element of the command as needed. Example: If the command syntax is: **ethernet/2/1** [<*parameter*> <*value*>] **. . .** , you enter **ethernet/2/1** and as many parameter-value pairs as needed.
italic text	Indicates file and directory names, new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore. Example: If the command syntax is: **show at** <*valid_route*> *valid_route* is one variable and you substitute one value for it.
`screen text`	Indicates system output, for example, prompts and system messages. Example: `Set Trap Monitor Filters`

separator (>)	Shows menu paths. Example: Protocols > IP identifies the IP option on the Protocols menu.
vertical line (|)	Separates choices for command keywords and arguments. Enter only one of the choices. Do not type the vertical line when entering the command. Example: If the command syntax is: **show ip** {**alerts** | **routes**}, you enter either: **show ip alerts** or **show ip routes**, but not both.

Acronyms

This guide uses the following acronyms:

ARP	Address Resolution Protocol
BootP	Bootstrap Protocol
FDDI	Fiber Distributed Data Interface
FTP	File Transfer Protocol
HTTP	Hypertext Transfer Protocol
IP	Internet Protocol
IPsec	IP Security
ISO	International Organization for Standardization
ITU-T	International Telecommunication Union - Telecommunication Standardization Sector (formerly CCITT)
LAN	local area network
LQR	Link Quality Report
MAC	media access control
MIB	management information base
MTU	maximum transmission unit
NBMA	nonbroadcast multi-access

NIC	network interface card
NTP	Network Time Protocol
NVFS	nonvolatile file system
OSPF	Open Shortest Path First
PAP	Password Authentication Protocol
PPP	Point-to-Point Protocol
PVC	permanent virtual circuit
QENET	Quad Ethernet link module
RADIUS	Remote Authentication Dial-In User Service
RIP	Routing Information Protocol
RMON	remote monitoring
SMDS	Switched Multimegabit Data Service
SNMP	Simple Network Management Protocol
SRM	System Resource Module
SRM-L	System Resource Module-Link
TCP/IP	Transmission Control Protocol/Internet Protocol
TFTP	Trivial File Transfer Protocol
VCI	virtual channel identifier
VPI	virtual path identifier
VPN	virtual private network
WAN	wide area network

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Valbonne, France	33-4-92-96-69-68
Sydney, Australia	61-2-9927-8800
Tokyo, Japan	81-3-5402-7041

Chapter 1
Overview of Quick-Start

The Quick-Start procedure boots your router locally and configures its initial interface to an IP network. To complete the Quick-Start procedure, follow these steps:

1. **Connect a PC or ASCII console to the router.**

   Connect a PC or a terminal to the router's console port to access the Technician Interface (Chapter 2).

2. **Connect the router to the IP network.**

   Connect a cable between the router and the IP network (Chapter 2).

3. **Establish a Technician Interface session.**

   Use the Technician Interface to run the installation script or to start the BCC (Chapter 2).

4. **Boot the router with the *ti.cfg* file to prepare it for the Quick-Start procedure (Chapter 2).**

5. **Prepare your network information using the appropriate worksheet (Chapter 3).**

6. **Decide whether to quick-start the router with:**

   - The installation script (*install.bat*)

     The installation script starts all supported routers. Run the installation script as described in Chapter 4, "Using the Installation Script to Quick-Start a Router."

- BCC commands

  You can also quick-start the router using BCC commands for an initial IP connection. This guide describes how to use the BCC to quick-start the router over an Ethernet port (Chapter 5).

7. **Complete your configuration.**

   Review the general procedure (Chapter 6) that you need to follow to complete the router's configuration using one or more of the following Nortel Networks tools:

   - Bay Command Console
   - Site Manager
   - NETarchitect™
   - Technician Interface

8. **Secure your router.**

   Review the security mechanisms you can implement for your router (Chapter 7).

9. **Install Site Manager.**

   If you choose Site Manager as your configuration tool, this guide provides installation instructions. Follow the instructions in the appropriate chapter to install Site Manager software on one of the following platforms:

   - PC running Windows® 95 or Windows 98 (Chapter 8)
   - Workstation running Windows NT® (Chapter 9)
   - SPARCstation (Chapter 10)
   - IBM workstation (Chapter 11)
   - HP 9000 workstation (Chapter 12)

Chapter 2
Preparing the Router for Quick-Start

To prepare your router for the Quick-Start installation, you make the router's physical connections, access the router's command-line interface, and boot with the proper installation file.

This chapter contains the following topics:

Topic	Page
Connecting a PC or Terminal Console	2-2
Connecting to the IP Network	2-4
Logging On to the Technician Interface	2-5
Using Technician Interface Commands	2-5
Reviewing the Installation Files	2-7
Booting with the ti.cfg File	2-9

Connecting a PC or Terminal Console

You make a local terminal connection to your router, using a terminal program on a PC or a terminal console, to access the router's Technician Interface. At the Technician Interface prompt, you enter the commands for the Quick-Start procedure.

Connecting a PC

To connect a PC to the router:

1. **Set the communications parameters in your terminal-emulation program.**

   For example, to set the HyperTerminal program that comes with Microsoft® Windows 95 and Windows 98:

   a. **From the Start Menu, choose Programs > Accessories > HyperTerminal.**

   b. **Double-click on Hypertrm.exe.**

   c. **In the Connection Description window, enter a name for the connection and choose an icon for the terminal program to display.**

   d. **Click on OK.**

   e. **In the Phone Number window, scroll through the Connect using menu and choose the COM port with the cable connection to the router.**

      This procedure sets up the terminal program to make a direct connection, instead of a phone connection.

   f. **Click on OK.**

   g. **In the COM Properties window, configure the port settings for your COM port as follows:**

      - Bits per second = 9600
      - Data bits = 8
      - Parity = none
      - Stop bits = 1
      - Flow control = Xon/Xoff

h. **Click on OK.**

i. **Choose File > Properties > Settings.**

j. **Choose the Terminal keys option for the Function, arrow, and ctrl keys option.**

   This selection enables Windows 95 or 98 to use terminal keyboard combinations when running the installation script.

Note: If you set this function to Windows keys, you will not be able to use keyboard combinations such as [Control]-C when running the installation script.

k. **Click on OK.**

l. **Choose File > Save to save your settings.**

2. **Connect the cable from the console port of the router to the COM port that you selected in the terminal emulation program.**

   See the installation guide that came with your router for the specific cable requirements for your router.

3. **Turn on the router to complete the internal diagnostics and startup.**

   When the router boots, the screen displays the Technician Interface `Login` prompt. You are now ready to enter Technician Interface commands (see "Logging On to the Technician Interface on page 2-5).

Connecting a Terminal Console

To connect a terminal console (terminal) to the router:

1. **Set the operating parameters of the terminal console as follows:**
   - Baud rate = 9600
   - Stop bits = 1
   - Parity = none
   - Data bits = 8
2. **Connect the cable from the terminal console to the console port of the router.**

See the installation guide that came with your router for the specific cable requirements for your router. For example, for the Backbone Concentrator Node (BCN®), you insert the male end of the cable (Order No. 7525) into the console port of the System Resource Module-Link (SRM-L) in slot 7.

3. **Turn on the router to complete the internal diagnostics and startup.**

   When the router boots, the screen displays the Technician Interface `Login` prompt. You are now ready to enter Technician Interface commands (see "Logging On to the Technician Interface on page 2-5).

Connecting to the IP Network

When you obtained your router, you also received a cable to connect the router to your IP network.

To connect the cable from the router to the IP network:

1. **Connect the cable to a router connector.**

   Table 2-1 lists the standard connectors (also called *ports*) for connecting the router to the IP network.

Table 2-1. Initial Router Connectors to the IP Network

Nortel Networks Router	Default Connector
ASN	Any connector on any net module, excluding the Stack Packet Exchange (SPEX™) module
BayStack AN, ANH, and ARN	See the installation guide.
BCN	First connector on the first link module (slot 1)
BLN	First connector on the first link module (slot 2)
System 5000™ net modules	See the installation guide.

You can configure any connector on a router for the initial IP connection by specifying the slot and connector when you quick-start the router with the installation script (Chapter 4) or the BCC (Chapter 5).

For information about the location of the connector on your router, see the installation guide that came with your router.

2. **Connect the cable to the network connector.**

   The network connection depends on your LAN or WAN configuration. For general information about cables, see the *Cable Guide.*

Logging On to the Technician Interface

When you connect to a Nortel Networks router and establish a terminal session, the Technician Interface `Login` prompt appears. The Technician Interface is a command-line interface provided with every Nortel Networks router.

You use the Technician Interface to:

- View the router's file system.
- Run the Quick-Start installation script.
- Access the BCC.
- Enter commands to manage your router and its MIB variables.

To log on to the Technician Interface, enter:

Manager

The Technician Interface displays a prompt consisting of the slot where the Technician Interface is running, followed by the `$` prompt, for example:

```
2$
```

To log off the Technician Interface, enter:

logout

Using Technician Interface Commands

To complete the Quick-Start procedure, you must enter several Technician Interface commands. Table 2-2 provides a list of the basic Technician Interface commands that you will need. You can also use the Help system to view available commands.

Technician Interface commands, passwords, and file names are case-sensitive. You must press the Return key to execute a Technician Interface command.

To display all Technician Interface commands in a brief table, enter:

help help

To display all Technician Interface commands and their associated syntax requirements, enter:

help

Use this command when you know the command's function, but do not know the command name or its syntax. Enter the **more on** command to control Help screen scrolling.

To display online Help for a specific Technician Interface command, use the **help** command, as follows:

help *<command>*

When you enter **help**, followed by a space and the name of a command, the console displays a detailed description of the command, along with its syntax requirements. For example, when you enter **help date**, the console displays a detailed description of the **date** command.

Table 2-2. Basic Technician Interface Commands

Command	Function
cd	Changes the active volume
compact	Reallocates file space on a memory card
copy	Copies a file from one volume to another or to the same volume
delete	Deletes a file from a volume
dinfo	Displays the volume number, status, and space for each volume
dir	Displays all files on a volume
format	Erases any existing files on a volume and formats the volume
more on	Enables the more mode; pauses the display and prompts you to continue when a screen fills
more off	Disables the more mode; the screen scrolls automatically without prompting you
partition	Partitions file system media into two volumes

(continued)

Table 2-2. Basic Technician Interface Commands *(continued)*

Command	Function
ping -ip *<IP_address>*	Pings an IP address (for example, 192.*xx.xxx.xx*) on an IP network
save	Saves the current software configuration, aliases, or events to a file
tftp	Transfers a file to or from the router
type	Displays the contents of a file

Reviewing the Installation Files

Your router stores its files on memory cards. The nonvolatile file system (NVFS) running in the router reads and writes to the memory cards for file storage. After establishing a Technician Interface session, you are ready to display the Quick-Start installation files and verify that they are available.

To display and verify the installation files:

1. **Find the memory card location.**

   Identify the volume where the router's memory card (volume) resides by entering:

   dinfo

   The Technician Interface displays a table showing the memory card's volume number and memory statistics. The volume number is equivalent to the slot on the router. BCN and Backbone Link Node (BLN®) routers can contain multiple memory cards---one memory card per slot.

2. **Display the names of the files in the volume by entering:**

   dir *<slot_number>***:**

   slot_number is the slot location of the memory card. Include the colon (:) after the slot number.

   For example, enter:

   TBLN>**dir 2:**

```
   Volume in drive 2: is
   Directory of 2:

File Name     Size          Date          Day    Time
-----------------------------------------------------------
bn.exe        3513155       01/10/99      Mon.   10:03:45
config        132           01/10/99      Mon.   10:03:45
ti.cfg        132           01/10/99      Mon.   10:03:45
install.bat   204323        01/10/99      Mon.   10:03:45
debug.al      12319         01/10/99      Mon.   10:03:45
bcc.help      165960        01/10/99      Mon.   10:03:45

8388608 bytes - Total size
4492587 bytes - Available free space
945812 bytes - Contiguous free space
```

3. **Note the available free space on the router volume.**

   You should always make sure that you have enough space on the volume to hold any new files you create or copy.

   In the following steps, you verify that the correct router software, configuration, and installation files are available. These steps may not be necessary for new routers with the files already installed, although they will help you become familiar with your router's files.

4. **Verify that the directory lists the Quick-Start installation files (Table 2-3).**

Table 2-3. Quick-Start Installation Files

File Name*	File Type
bn.exe	Bootable router software image (see Table 2-4 for other router images)
config	Default configuration file
debug.al	Alias file
install.bat	Quick-Start installation script file
ti.cfg	Initial configuration file
bcc_bn.hlp	BCC Help file

* All router files must belong to the same software version. Other files may be in the directory. Router file names may vary slightly; for example, System 5000 net modules use the *ti_5000.cfg* file.

5. **Verify that all router files belong to the same software version.**

   For example, you should not use a Version 13.20 *install.bat* script with BayRS Version 14.00 files.

6. **Verify that the directory holds the correct software image for your router (Table 2-4).**

Table 2-4. Router Software Images

Router	Software Image
AN and ANH*	*an.exe*
ARN*	*arn.exe*
ASN*	*asn.exe*
BCN	*bn.exe*
BLN	*bn.exe*
System 5000 net modules	*s5000.exe*

* See the Quick-Start restrictions for these routers on page xiv.

Booting with the ti.cfg File

To prepare new routers for initial configuration, you first boot the router with the *ti.cfg* file. The *ti.cfg* file is an initial configuration file containing only the minimal information needed to boot the router. You then run the installation script or use BCC commands to add configuration information about your first IP interface.

When you complete the Quick-Start procedure, you save your new configuration information to a file called *startup.cfg*. Do not edit the *ti.cfg* file or overwrite it with another configuration file.

If the installation fails, you must reboot the router with *ti.cfg* before retrying the Quick-Start procedure. You also should boot with the *ti.cfg* file if:

- The router is currently booted from a configuration file other than *ti.cfg* and you want to reconfigure the router from scratch.
- You change the initial IP connector (port) that you use to communicate with the configuration workstation.

To boot the router using the *ti.cfg* file:

1. **Enter the following command:**

   boot *<slot_number>*:*<image_file>* *<slot_number>*:**ti.cfg**

   slot_number identifies the slot where the files reside on the router and *image_file* is the software image for your router (see Table 2-4).

   For example, enter:

   boot 2:bn.exe 2:ti.cfg

   The router boots and executes its startup procedure.

2. **Establish a new Technician Interface session by entering:**

   Manager

In Chapter 3, “Preparing Your Network Information,” you will collect and record the network information needed to complete the Quick-Start procedure.

Chapter 3
Preparing Your Network Information

This chapter provides worksheets to help you collect the information that you will need to quick-start the router using either the installation script or BCC commands. This chapter provides the following information:

Topic	Page
Using the Quick-Start Worksheet	3-2
Using the Quick-Start ATM Worksheet	3-7
Using the Quick-Start Worksheet for WAN Protocols	3-12

Whether you use the installation script or BCC commands, you quick-start the router as follows:

1. Select an interface and supply information about its connector and circuit.
2. Configure IP on the interface.
3. Enable these global communication services (optional):
   - SNMP (required if you want to use Site Manager for additional configuration)
   - TFTP
   - FTP
   - Telnet
   - HTTP Server (required if you want to use the Web (HTTP) Server)
4. Save the configuration file as *startup.cfg.*
5. Test the initial configuration by pinging the workstation that you will use to continue the configuration.

Many BCC commands and installation script prompts provide default values. Accept the default values unless you have a reason to make a change. You can skip optional steps and steps that do not apply to your network.

Using the Quick-Start Worksheet

The Quick-Start Worksheet (Table 3-1) provides a summary of the information that you need to complete the Quick-Start procedure. The information can be applied to either the installation script or BCC commands.

Most customers configure their initial IP interface on Ethernet. The Quick-Start Worksheet assumes an Ethernet interface in the connector and circuit fields. For interfaces other than Ethernet, substitute the appropriate connector and circuit information and complete the rest of the worksheet beginning with the IP Configuration section.

For other interfaces, see the appropriate configuration guide for more information about connector and circuit requirements:

- *Configuring Ethernet, FDDI, and Token Ring Services*
- *Configuring WAN Line Services*

If you plan to use the Quick-Start procedure to configure an ATM interface, go to "Using the Quick-Start ATM Worksheet" on page 3-7. If you plan to use the Quick-Start procedure to configure an interface (such as serial) that supports a WAN protocol, see "Using the Quick-Start Worksheet for WAN Protocols" on page 3-12.

Figure 3-1 shows a sample Ethernet network used in the examples in the Quick-Start Worksheet. See Appendix A, "Sample Installation Script," for an example of the script execution.

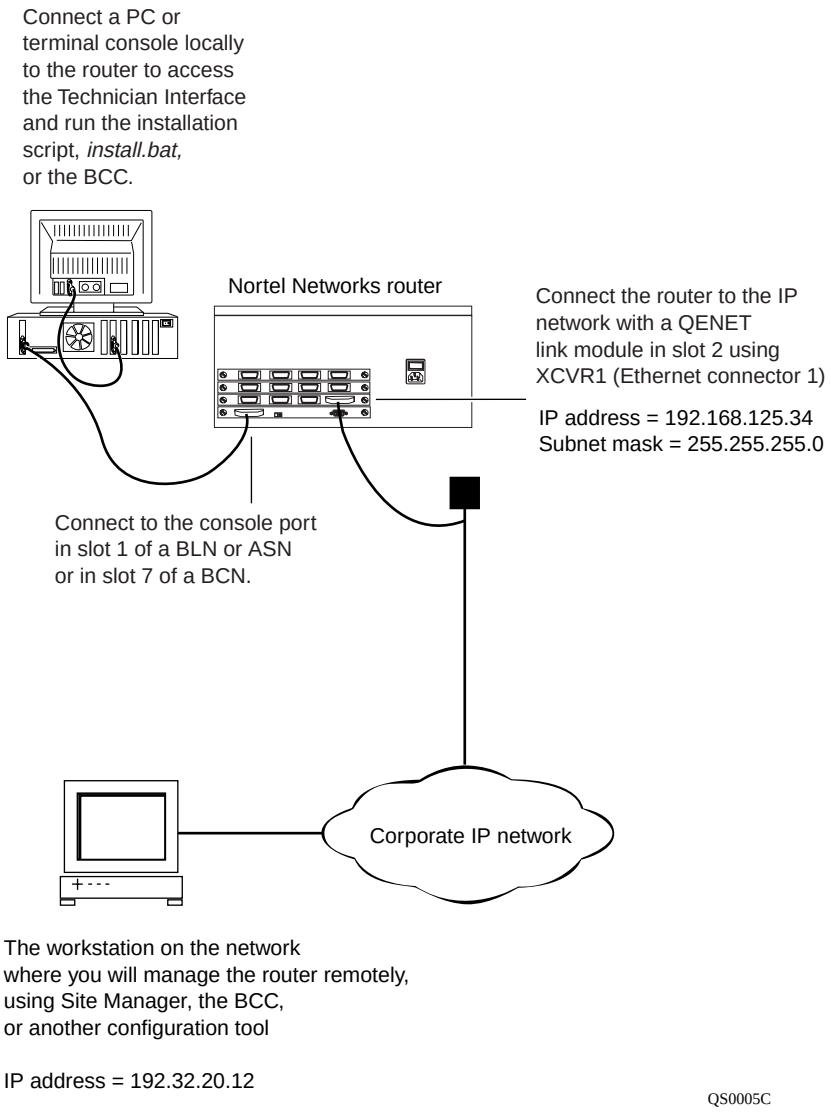
Connect a PC or terminal console locally to the router to access the Technician Interface and run the installation script, *install.bat,* or the BCC.
Nortel Networks router
Connect the router to the IP network with a QENET link module in slot 2 using XCVR1 (Ethernet connector 1)
IP address = 192.168.125.34
Subnet mask = 255.255.255.0
Connect to the console port in slot 1 of a BLN or ASN or in slot 7 of a BCN.
Corporate IP network
The workstation on the network where you will manage the router remotely, using Site Manager, the BCC, or another configuration tool
IP address = 192.32.20.12
QS0005C

Figure 3-1. Network Example for the Quick-Start Worksheet

Table 3-1. Quick-Start Worksheet

Network Information	Example	Your Information
Physical Connector Information		
Number of the slot holding the link module for the first network interface **Note:** For the ASN, also provide the module number (for example, module 1).	Slot 2 (QE100BT link module)	
Number of the connector (port) on the link module	Ethernet connector 1 (XCVR1)	
FRE-4-PPC Information		
Line speed	10BASE-TX Full Duplex	
Enable mini-RMON? If you have a FRE-4-PPC processor module on a BN router, you can enable mini-RMON. The default is No.	Yes	
Circuit Information		
Circuit name (default is provided) **Note:** Substitute circuit information for interfaces other than Ethernet.	E21	
IP Configuration		
IP address of this initial interface (Advanced users only: *install.bat* supports unnumbered interfaces; however, there is no BCC support for them.)	192.168.125.34	
Subnet mask of this initial interface	255.255.255.0	
If this interface resides on the same local area network (LAN) as the workstation that you will use to connect to the router, you have completed the initial IP configuration. Proceed to add global services. If the workstation resides on a different network, add an IP routing protocol next.	No	

(continued)

Table 3-1. Quick-Start Worksheet *(continued)*

Network Information	Example	Your Information
IP Routing Protocol Information		
Choose an IP routing protocol if the configuration workstation is located on another network: • RIP • OSPF • Static route See the following sections for details on the IP routing protocol that you choose to configure.	RIP	
RIP Configuration		
Should RIP listen to the default route to the network or subnet where the workstation is located?	Yes	
Select the RIP version: • RIP1 • RIP2 • RIP2_AGGR (RIP 2 with the automatic aggregation of subnets provided by RIP Version 1)	RIP1	
OSPF Configuration		
OSPF router ID (if different from this interface; typically, the OSPF router ID is set to the value of the first IP interface configured on the router)	0.0.0.1	
OSPF area address	0.0.0.0	
Enable Simple Password Authentication?	No	
MTU size for OSPF packets (Default, Ethernet Size, User-defined MTU)	Default	
OSPF interface type (Broadcast, NBMA, Point to Point, Point to MultiPoint) **Note:** If there is an existing OSPF configuration on the network, you must set matching values for the interface type, Hello interval, and dead interval.	Broadcast (default)	
Hello interval (in seconds)	10 (default)	
Router dead interval (in seconds)	40 (default)	
Router priority	1 (default)	
Poll interval	120 (default)	

(continued)

Table 3-1. Quick-Start Worksheet *(continued)*

Network Information	Example	Your Information
If you are configuring OSPF neighbors, add the IP address for each neighbor. **Note:** Neighbors are defined only if the OSPF interface type is NBMA. Sample format: 192.32.156.8		
Static Route Configuration		
Destination network	192.32.90.0	
Destination network mask	255.255.255.0	
Next-hop address that is in the same subnet as the initial IP interface	192.168.125.42	
Global Services Information These steps set communication services globally for all interfaces on the router. You can increase router security by restricting SNMP communities, FTP, and Telnet. See Chapter 7, “Securing the Router.”		
Enable SNMP Community Management?	Yes	
For each SNMP community, decide whether it is public or private, its read-write access, and the IP address of the manager.	public, read-only, 192.32.20.12	
Enable TFTP?	Yes	
Default volume where TFTP transactions will take place	2	
Enable FTP?	Yes	
Default volume where FTP transactions will take place	2	
Enable Telnet?	Yes	
Enable Telnet client?	Yes	
Enable Telnet server?	Yes	
Enable the HTTP (Web) server? Provides embedded Web tools on the router to view device information.	Yes	
Workstation Information		
IP address of the workstation that you will use to configure the router	192.32.20.12	

Using the Quick-Start ATM Worksheet

The Quick-Start installation script allows you to configure initial routing services for the ATM Routing Engine link module in Nortel Networks routers. You can then use Site Manager or the BCC to refine your configuration.

Use the Quick-Start installation script to add ATM to the router by:

- Defining the physical link
- Defining an ATM service record
- Creating an ATM circuit
- Adding the initial virtual circuit to the service record (PVCs only)
- Enabling the IP protocol on the ATM service record

The Quick-Start ATM Worksheet (Table 3-2) contains only the ATM connector, circuit, and service record information. After you specify the ATM interface, the Quick-Start script prompts you for the same information found in Table 3-1, beginning with the IP Configuration section.

Figure 3-2 shows a sample ATM network used in the examples in the ATM Quick-Start Worksheet.

See Appendix B, “Sample ATM Installation Script,” for an example of the script execution.

For more information about the parameters set in the script, see *Configuring ATM Services*.

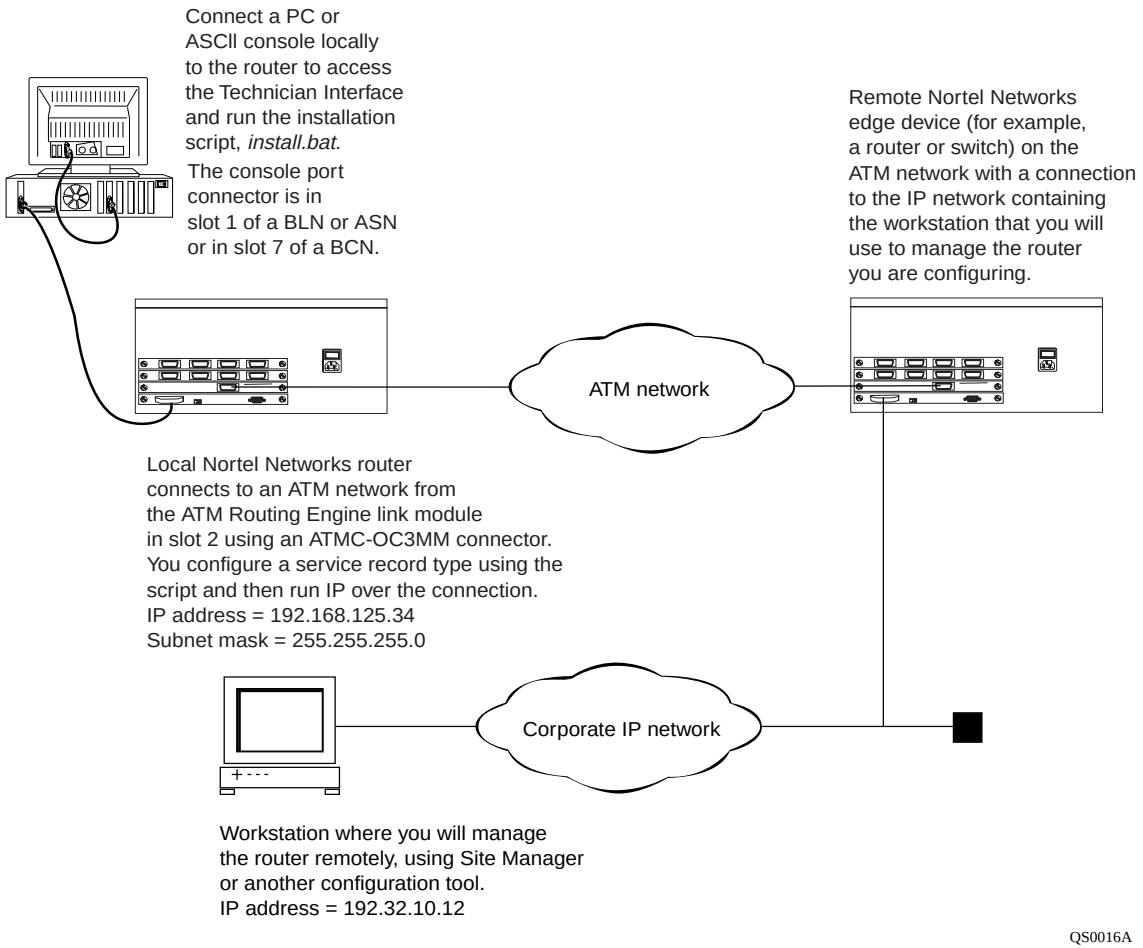
Connect a PC or ASCII console locally to the router to access the Technician Interface and run the installation script, *install.bat.*
The console port connector is in slot 1 of a BLN or ASN or in slot 7 of a BCN.
Remote Nortel Networks edge device (for example, a router or switch) on the ATM network with a connection to the IP network containing the workstation that you will use to manage the router you are configuring.
ATM network
Local Nortel Networks router connects to an ATM network from the ATM Routing Engine link module in slot 2 using an ATMC-OC3MM connector. You configure a service record type using the script and then run IP over the connection.
IP address = 192.168.125.34
Subnet mask = 255.255.255.0
Corporate IP network
Workstation where you will manage the router remotely, using Site Manager or another configuration tool.
IP address = 192.32.10.12
QS0016A

Figure 3-2. Network Example for the Quick-Start ATM Worksheet

Table 3-2. Quick-Start ATM Worksheet

Network Information	Example	Your Information
ATM Physical Link Information		
Slot number of the link module	4 (ATMC_OC3MM)	
Connector number [1]:	1 (ATM1)	
Choosing a Service Record Type		
Enter ATM Service Record Type [1]: 1. ATM PVC 2. ATM LAN Emulation 3. ATM Logical IP Subnet Continue with the information for your service record type.	1 (ATM PVC)	
PVC Service Record Type		
Enter encapsulation type [1]: 1. LLC/SNAP (RFC 1483) 2. NLPID (RFC 1490)	2 (NLPID (RFC 1490))	
For VPI, enter a number from 0 through 255. The VPI (virtual path identifier) number of the initial PVC identifies the virtual path of the PVC. The VPI is part of the cell header. The header can contain a maximum of 8 VPI bits. This bit range allows for path identifiers from 0 through 255.	0	
For VCI, enter a valid number in these ranges: - ARE module in a BLN/BCN router: 32 - 65535 - Model 5780 ATM VNR in a Model 5000AH chassis: 130 - 2047 - Model 5782 ATM VNR in a Model 5000BH chassis: 130 - 2047 The VCI (virtual channel identifier) number of the initial PVC identifies the virtual channel portion of the PVC. The VCI is part of the cell header and has a length of 16 bits.	200	

(continued)

Table 3-2. Quick-Start ATM Worksheet *(continued)*

Network Information	Example	Your Information
Enter circuit name: (The script recommends a default name.)	ATMSR_1404101.3	
LAN Emulation Service Record Type		
Signaling Version [1]: 1. UNI3.0 2. UNI3.1	2 (UNI3.1)	
Do you want Auto Generation of the ATM address? (y/n) [y]: If you choose Auto Generation, router software will use a combination of the MAC address and the network prefix obtained from the server to generate a unique ATM address. If you do not choose Auto Generation, enter a 7-byte User Part (Mandatory) and a 13-byte Net Prefix (Optional) to be combined into a 20-byte ATM address. Enter User Part (Mandatory), 7 bytes: Enter Net Prefix (Optional), 13 bytes:	No 12345677654321 39000000000000000000000000	
Choose the Emulated LAN Name. Press [Return] to accept the default ELAN name or type the name of a previously configured ELAN for this LAN Emulation client to join.	AAA	
Choose Emulated LAN Type [1] 1. Unspecified 2. IEEE8023 3. IEEE8025	3 (IEEE8025)	
Enter circuit name. (The script recommends a default name.)	ATMSR_1404101.5	

(continued)

Table 3-2. Quick-Start ATM Worksheet *(continued)*

Network Information	Example	Your Information
Logical IP Service Record Type		
Signaling Version [1]: 1. UNI3.0 2. UNI3.1	1 (UNI3.0)	
Do you want Auto Generation of the ATM address? (y/n) [y]: If you choose Auto Generation, router software will use a combination of the MAC address and the network prefix obtained from the server to generate a unique ATM address. If you do not choose Auto Generation, enter a 7-byte User Part (Mandatory) and a 13-byte Net Prefix (Optional) to be combined into a 20-byte ATM address. Enter User Part (Mandatory), 7 bytes: Enter Net Prefix (Optional), 13 bytes:	No 12345677654321 39000000000000000000000000	
Choose the ATM ARP Mode. - Client Mode [Default] - Server Mode If you choose the default (Client Mode), you must enter the ARP Server ATM Address. Would you like to accept Client Mode for ATM ARP? (y/n) [y]:	 Yes	
Enter ARP Server ATM Address in hexadecimal format, omitting leading 0x/0X. Enter Network Prefix (Mandatory), 13 bytes: Enter User Part (Mandatory), 7 bytes:	 39000000000000000000000000 11111111111111	
Refer to Table 3-1, the Quick-Start Worksheet, to continue the initial configuration.		

Using the Quick-Start Worksheet for WAN Protocols

Use the Quick-Start Worksheet for WAN Protocols (Table 3-3) to record the information that you will need to enable frame relay, PPP, or SMDS using the installation script. (Using the script to enable WAN protocols is recommended for experienced users only.) Normally you implement these protocols using Site Manager or another configuration tool. The script prompts for a WAN protocol if you select a connector that supports WAN protocols, for example, serial.

For more information about the WAN protocol parameters, see these guides:

- *Configuring Frame Relay Services*
- *Configuring PPP Services*
- *Configuring SMDS*

Table 3-3. Quick-Start Worksheet for WAN Protocols

Network Information	Example	Your Information
WAN Information Advanced users can use the Quick-Start script to initially configure frame relay, PPP, or SMDS. See the configuration guides for more information about the parameters.		
Frame Relay Information (To enable frame relay on a serial connector on this initial IP interface)		
Enable frame relay on the interface?	Yes	
Management protocol that communicates with the frame relay network	LMI	
DLCI addressing types	ADDR Q.922	
Frame relay address field length	2 bytes	
Frame relay PVC ID	30	

(continued)

Table 3-3. Quick-Start Worksheet for WAN Protocols *(continued)*

Network Information	Example	Your Information
PPP Information (To enable PPP on a serial connector on this initial IP interface)		
Enable PPP on the interface?	Yes	
IP address of peer connection	192.32.4.2	
Enable PPP Echo protocol?	Yes	
Number of seconds between transmission of echo requests	10	
Acceptable loss of echo-reply packets	3	
Enable local authentication protocol?	Yes	
Local PAP ID for this interface	192.32.4.1	
Local PAP password (optional)	lpwd	
Authentication protocol enabled on remote peer?	Yes	
Remote peer PAP password	rpwd	
Enable Link Quality Reporting (LQR) protocol?	Yes	
Enable use of remote peer's LQR timer?	Yes	
Minimum acceptable percentage of inbound packets	90	
Minimum acceptable percentage of outbound packets	90	
SMDS Information (To enable SMDS on a serial connector on this initial IP interface)		
Enable SMDS on the interface?	Yes	
Individual address	C1617555433FFFF	
Group address	E16175556667FFFF	
ARP address	E16175550000FFFF	

Chapter 4
Using the Installation Script to Quick-Start a Router

The *install.bat* script establishes an initial IP network interface on the router so that your router can communicate with the workstation from which you will manage the router.

The script prompts you to enter the network information that dynamically configures the initial IP interface (see Appendix A for a sample script execution). You configure subsequent interfaces with Site Manager, the BCC, or another router configuration tool.

Note: You can use either the BCC or the *install.bat* script to establish an initial IP interface. For information about using the BCC, see Chapter 5, "Using the BCC to Quick-Start a Router."

Following are important points to remember about running the script:

- You must boot the router with the *ti.cfg* file before running the script.
- Do not overwrite the *ti.cfg* file.
- Save your initial configuration file as *startup.cfg*.
- After the script completes successfully, do not reboot your router.
- If the script fails, see "Quick-Start Troubleshooting" on page 4-4.
- If you must rerun the script, first reboot the router with the *ti.cfg* file.
- Immediately after running the script, secure your router. For more information, see Chapter 7, "Securing the Router."

Before you start the script, review Table 4-1 for the commands that you use to run the script.

Table 4-1. Installation Script Commands

Script Action	Your Input	Result
Accept the default value.	Press [Return].	Accept the default value that the script displays in brackets, for example, `[E21]`.
Repeat a step to make a correction.	Press [Control]-C.	The script displays this prompt: `Terminate script y/n?` Enter **n** to return to the beginning of the step so that you can reenter the information.
Exit the installation script.	Press [Control]-C.	The script displays this prompt: `Terminate script y/n?` Enter **y** to terminate the script and return to the Technician Interface prompt. Before rerunning the Quick-Start installation script, reboot the router using the *ti.cfg* file.

After booting the router with the *ti.cfg* file and establishing a new Technician Interface session, you are ready to run the *install.bat* installation script.

To run the script:

1. **Access the volume where the installation files reside by entering:**

   cd <*volume_number*>**:**

   Include the colon (:) after the volume number.

   For example, enter **cd 2:**

2. **Start the installation script by entering:**

   run install

   Many steps in the installation script provide default values that you should accept. Some steps are optional for your network requirements.

   Refer to your Quick-Start worksheet (see Chapter 3) as you respond to the prompts.

3. **Select a slot and connector on the router.**

4. **If the slot you selected in step 3 contains a FRE®-4-PPC Ethernet link module, select a line speed.**

5. **If you have a FRE-4-PPC processor module on a BN router, the following prompt appears:**

   ```
   Enable Mini-RMON (y/n) [n]:
   ```

   If you want to enable mini-RMON, enter **y** and press the Return key. If you do not want to enable mini-RMON, press the Return key to accept the default.

6. **Configure IP on the interface.**

7. **Enable global services for:**

   - SNMP
   - TFTP
   - FTP
   - Telnet
   - HTTP Server

Note: You can enable the HTTP (Web) Server on the router to access embedded Web tools to view device information. For more information, see *Managing Routers Using the HTTP Server.*

8. **Review the configuration.**

   The script displays a summary of the newly configured IP interface.

9. **Save the configuration file as *startup.cfg*.**

   Accept the default name, *startup.cfg.* You save this initial IP configuration to the file to maintain a permanent copy for the next time you reboot the router.

   Do not save your configuration file as *ti.cfg*. That file should remain in its original, unconfigured state.

   Do not save your file as *config.* Use that file name only after you have fully tested a configuration file. The router uses *config* as the default boot file and will automatically boot with it if another file is not specified.

10. **Test the initial IP interface.**

    The router tests the IP interface configuration by pinging its own interface. If successful, it prompts you for the IP address of the workstation that you will use to configure the router and attempts to ping it.

If the ping test is not successful, the cause may be network problems that have nothing to do with the Quick-Start installation. To troubleshoot the network problems, you can leave the ping test by typing **Q**. See "Quick-Start Troubleshooting" on page 4-4 for more information.

If the ping test is successful, the initial IP interface is enabled and the script displays this message:

```
Quick-Start Installation Completed
```

The Technician Interface prompt appears.

You now have a configuration file named *startup.cfg* on the router volume that contains your initial interface. The configuration is active in the router's memory.

Caution: Do not reboot the router after successfully completing the Quick-Start procedure. By default, the router reboots with the file named *config*, not the *startup.cfg* file that you just created. See Chapter 6, "Completing the Router Configuration," for instructions on testing the *startup.cfg* file before you save it as *config*.

Nortel Networks recommends that you immediately secure your router to prevent unauthorized access. See Chapter 7, "Securing the Router," for information.

Quick-Start Troubleshooting

If the router cannot ping the workstation during the Quick-Start procedure, check the following:

- If the router was able to ping its own interface, and the script prompted you for the interface of the workstation, you probably have a successful installation. To be sure, continue with the remaining checks.
- Check the physical connections.
- If the workstation is a PC, a supported TCP/IP stack must be running for a successful ping. See Chapter 8, "Installing Site Manager on a PC," for information about TCP/IP stacks, adapters, and drivers.
- Verify the IP address of the router. Enter the **show ip circuits** command at the Technician Interface prompt to make sure that the physical interface is up and that the IP address is correct. For more information about the **show** command, see *Using Technician Interface Scripts*.

- Verify the IP address and subnet mask address of the configuration workstation.
- If the workstation is on a different network, verify that routing is active. Enter the **show ip routes** command at the Technician Interface prompt to examine the routing table and verify that there is a route or a default route to the network where the workstation is located. For more information about the **show** command, see *Using Technician Interface Scripts.*

Note: If the installation failed and you must rerun the script, first reboot the router with the *ti.cfg* file.

Chapter 5
Using the BCC to Quick-Start a Router

The Bay Command Console (BCC) is a command-line interface to your Nortel Networks router. You can configure and manage your routers using BCC commands. This chapter tells you how to use the BCC to quick-start a router and produce an initial configuration file called *startup.cfg*. Refer to the following topics:

Topic	Page
Overview of the BCC	5-2
Essential BCC Commands	5-4
Quick-Starting Your Router with the BCC	5-5
Quick-Start Troubleshooting with the BCC	5-13

Note: You can use either the *install.bat* script or the BCC to establish an initial IP interface. For information about using the script, see Chapter 4, "Using the Installation Script to Quick-Start a Router."

See "Using the Quick-Start Worksheet" on page 3-2 to collect the network information that you will need to quick-start the router with BCC commands.

Immediately after quick-starting with the BCC, secure your router. For information, see Chapter 7, "Securing the Router."

This chapter provides only the information needed to create an initial interface. You can continue the configuration with the BCC or another configuration tool, such as Site Manager.

Overview of the BCC

You access the BCC by entering **bcc** at the Technician Interface prompt. The `bcc>` prompt appears, from which you can run any BCC or Technician Interface command. You enter configuration mode by entering **config**.

The BCC views the router as a hierarchy of objects and parameters that you can configure either globally for the whole router or individually for each interface. The BCC always displays a prompt that indicates your current working context (or location) within the hierarchy.

You start from the root level (at the `box#` or `stack#` prompt) and define each interface and its protocols. To quick-start a router, you configure one Ethernet interface, add the IP protocol, and add a routing protocol if the workstation is located on a different LAN than the router (Figure 5-1). Next, you add global services that apply uniformly to all slots of a router: SNMP, FTP, TFTP, Telnet, and the HTTP Server.

For more information about the BCC, see:

- *Using the Bay Command Console (BCC)*
- *BCC Quick Reference*
- *Release Notes*

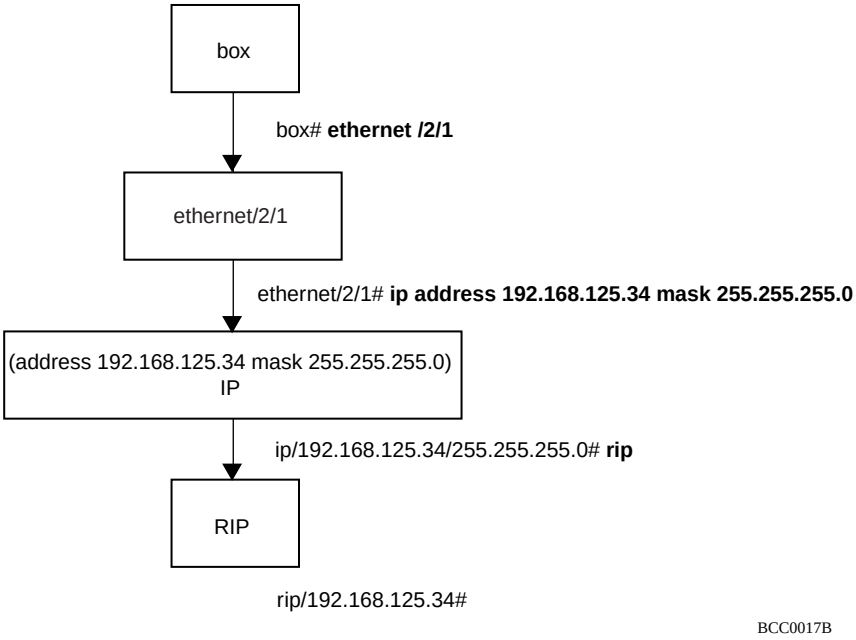

Figure 5-1. Configuring IP and RIP on an Ethernet Interface

Essential BCC Commands

Table 5-1 lists the essential BCC commands you need to use BCC Help, change your location, view what you can configure, and review what you added. To run the Help, you must have the BCC Help file (for example, *bcc_bn.hlp*) installed.

Table 5-1. Essential BCC System and Navigation Commands

Category	BCC Command	Task
System Help	**?**	List the system commands that you can enter.
	help	List BCC Help features.
Configuration mode Help	**?**	List the names of all objects, parameters, and commands at this level.
	<object> **?**	Show the configuration syntax and list the parameters of an object that you can configure from the current level.
	<parameter> **?**	Display values for this parameter of the current object.
	help tree [-all]	Show the BCC configuration structure.
	info	List values assigned to parameters of this object.
	lso	Show objects configured at the next (branch) level.
Navigation	**back**	Go back one level.
	pwc	Show full context, starting from root level.
	box (AN/ARN/BN) or **stack** (ASN/System 5000)	Return to the top level of router configuration.
Configuration mode	**config**	Enter configuration mode.
Configuration status	**show config -all**	Show the total device configuration in BCC syntax.
Other commands	**[Control]+p** **[Control]+n**	Recall previous or next command from the command history list.
	exit	Exit configuration mode; enter **exit** again to return to the Technician Interface prompt.

Quick-Starting Your Router with the BCC

The following procedure provides a sequence of commands that you can use to quick-start your router on an Ethernet network. Before beginning this procedure you need to:

- Learn the basic BCC commands listed in Table 5-1.
- Complete the steps in Chapter 2, “Preparing the Router for Quick-Start,” including booting the router with the *ti.cfg file*.
- For BayStack routers, review the local boot procedure and slot and connector information in *Configuring BayStack Remote Access*. By default, the BayStack router is configured to boot over the network. To quick-start a BayStack router with the BCC, you must first change the default boot to local mode with the **bconfig config local** command.

To quick-start your router:

1. **Log on to the Technician Interface as Manager.**

```
Login: Manager

Mounting new volume...
Device label:
Directory: 2:
New Present Working Directory: 2:


   Welcome to the Backbone Technician Interface
```

2. **Start the BCC interface by entering bcc.**

```
[2:1]$ bcc

     Welcome to Bay Command Console!

     * To enter configuration mode, type config

     * To list all system commands, type ?

     * To exit the BCC, type exit

bcc>
```

3. **Start BCC configuration mode by entering config at the `bcc>` prompt.**

```
bcc> config
```

```
box#
```

4. **Check the hardware configuration of the router.**

```
box# show config -all
box type freln (BLN router with a FRE controller)
   board slot 1
      type srml (System Resource Module in slot 1)
   back
   board slot 2
      type qenf (Quad Ethernet link module in slot 2)
   back
   board slot 3
      type wffddi2m (Multimode FDDI link module in slot 3)
   back
   board slot 4
      type sync (Synchronous link module in slot 4)
   back
   board slot 5
      type dtok (Dual token ring link module in slot 5)
   back
   back
   console portnum 1 (Console connected to port 1)
   prompt {[%slot%:1]$ }
   auto-manager-script automgr.bat
   auto-user-script autouser.bat
   back
back
```

5. **If you have a FRE-4-PPC processor module on a BN router and you want to enable mini-RMON, enter rmon at the** `box#` **prompt.**

```
box# rmon
```

6. **Enter native-rmon at the** `rmon#` **prompt.**

```
rmon# native-rmon
```

7. **Configure a port on the router for the initial interface by adding an interface type of Ethernet on a slot with an appropriate board and adding its first connector.**

```
box# ethernet slot <number> connector <number>
```

Use the slot and connector number for your router. For example, enter:

```
box# ethernet slot 2 connector 1
```

8. **Add IP to this port by entering its IP address and subnet mask.**

```
ethernet/2/1# ip address <ip_address> mask <mask_value>
```

For example, enter:

```
ethernet/2/1# ip address 192.168.125.34 mask 255.255.255.0
ip/192.168.125.34/255.255.255.0#
```

The BCC automatically enables ARP on this interface and adds IP globally to this router.

If your workstation is on the same LAN as the router, go to step 12. If your workstation is not on the same LAN as the router, add one of the following routing protocols:

- RIP
- OSPF
- Static route

9. To add RIP as the routing protocol for this IP port, enter:

```
ip/192.168.125.34/255.255.255.0# rip
rip/192.168.125.34#
```

Go to step 12.

10. To add OSPF as the routing protocol for this IP port:

a. At the IP interface prompt, enter:

```
ip/192.168.125.34/255.255.255.0# ospf area <area_id>
```

For example, the following command assigns the IP interface that you created to OSPF area 0.0.0.0, the OSPF backbone:

```
ip/192.168.125.34/255.255.255.0# ospf area 0.0.0.0
```

b. View the default values assigned to this OSPF interface.

```
ospf/192.168.125.34# info
   area 0.0.0.0
   authentication {}
   type broadcast
   priority 1
   transit-delay 1
   retransmission-interval 5
   hello-interval 10
   dead-interval 40
   poll-interval 120
   metric 1
   mtu 1
   mtu-mismatch-detect enabled
   state enabled
```

The type, hello-interval, and dead-interval parameters must match those of your network. To change these default values, refer to Table 5-1 on page 5-4 to learn about the Help and navigation commands. Use the parameter Help command (example: **type ?**) to view the values that you can assign and any further parameters you need to configure. See *Using the Bay Command Console (BCC)* and *Configuring IP, ARP, RARP, RIP, and OSPF Services* for more information.

c. **If the OSPF router ID is the same as the IP address of the first router port, go to step 12.**

d. **If the OSPF router ID is different from the IP address of this first router port, return to root level to change the global OSPF router ID.**

```
ospf/192.168.125.34# box
box#
```

e. **Move to global IP by entering:**

```
box# ip
ip#
```

f. **Move to global OSPF by entering:**

```
ip# ospf
ospf#
```

g. **Change the OSPF router ID by entering:**

`ospf#` **router-id** *<ip_address>*

For example, enter:

`ospf#` **router-id 192.168.125.10**

Go to step 12.

11. **To add a static route to this IP port:**

a. **Return to the root level to configure the static route globally.**

```
ip/192.168.125.34/255.255.255.0# box
```

b. **Move to global IP by entering:**

```
box# ip
```

c. **Add a static route and the next hop by entering:**

`ip#` **static-route address** *<destination_ip_address>*
mask *<destination_mask_value>* **next-hop-address** *<ip_address>*

For example, enter:

```
ip# static-route address 192.168.124.10 mask 255.255.255.0
next-hop-address 192.168.125.35
static-route/192.168.124.10/255.255.255.0/192.168.125.35#
```

12. **Return to root level to configure global system services that affect all slots, such as SNMP, FTP, Telnet, TFTP, and the HTTP Server.**

    ```
    <current_level># box
    ```

13. **Add SNMP globally to the router by entering:**

    ```
    box# snmp
    snmp#
    ```

14. **Specify an SNMP community name, for example, "public."**

    ```
    snmp# community public
    community/public#
    ```

15. **Define the access level that you want for the port for router security.**

    By default, access is read-only. If you want access to be read-write, enter:

    ```
    community/public# access read-write
    ```

16. **Define the workstation that will be the SNMP manager for the router by entering:**

    ```
    community/public# manager <ip_address>
    ```

    ip_address is the address of the workstation that will be the SNMP manager. (An address of 0.0.0.0 allows any workstation to be the manager.)

    For example, enter:

    ```
    community/public# manager 192.32.20.12
    manager/public/192.32.20.12#
    ```

17. **Return to root level.**

    ```
    manager/public/192.32.20.12# box
    ```

18. **Configure Telnet from the root level by entering:**

    ```
    box# telnet
    ```

19. **Add the Telnet client.**

    ```
    telnet# client
    client#
    ```

20. **Go back one level by entering:**

    ```
    client# back
    telnet#
    ```

21. **Add the Telnet server.**

    ```
    telnet# server
    ```

22. **Return to root level.**

    ```
    telnet# box
    ```

23. **Add TFTP to the router from the root level.**

    ```
    box# tftp
    ```

24. **Return to root level.**

    ```
    tftp# box
    ```

25. **Add FTP to the router from the root level.**

    ```
    box# ftp
    ```

26. **Return to root level.**

    ```
    ftp# box
    ```

27. **Add the HTTP Server to the router from the root level.**

    ```
    box# http
    ```

28. **Return to root level.**

    ```
    http# box
    ```

29. **Save your initial configuration file to the router's volume as *startup.cfg*.**

    box# **save config** *<volume>*:**startup.cfg**

    For example, enter:

    box# **save config 2:startup.cfg**

    Save the configuration as a file other than *config* until you can test the configuration file.

30. **Test the initial IP interface by pinging the router's own interface.**

    box# **ping** *<ip_address>*

    For example, enter:

    box# **ping 192.168.125.34**

31. **Test the initial IP interface by pinging the workstation where you use the BCC or other configuration tool.**

    box# **ping** *<ip_address>*

    For example, enter:

    box# **ping 192.32.20.12**

    If either ping is unsuccessful, see "Quick-Start Troubleshooting with the BCC" on page 5-13.

32. **Review your initial router configuration by entering:**

    box# **show config -all**

    This command shows the total device configuration in terms of BCC syntax (commands and data), and returns you to the current context.

    For example, enter:

```
box# show config -all
box type freln
   board slot 1
      type srml
   back
   board slot 2
      type qenf
   back
   board slot 3
      type wffddi2m
   back
   board slot 4
     type sync
   back
   board slot 5
     type dtok
   back
  ethernet slot 2 connector 1
      circuit-name E21
    ip address 192.168.125.34 mask 255.255.255.0
      arp
      back
      rip
      back
   back
       back
        ip
            tcp
            back
```

```
            arp
            back
            rip
            back
         back
         ftp
             default-volume 2
         back
         snmp
            community label public
               access read-write
            manager address 192.32.20.12
            back
         back
      back
      tftp
          default-volume 2
      back
          console portnum 1
            prompt {[%slot%:1]$ }
            auto-manager-script automgr.bat
            auto-user-script autouser.bat
   back
   telnet
      client
      back
      server
      back
    back
back
box#
```

33. **Exit BCC configuration mode by entering the exit command at any prompt.**

```
box# exit
bcc>
```

34. **When you finish using the BCC, enter the exit command at the** `bcc>` **prompt.**

```
bcc> exit
[2:1]$
```

Exiting the BCC returns you to the Technician Interface prompt.

You now have a configuration file named *startup.cfg* on the router volume that contains your initial interface. The configuration is active in the router's memory.

Caution: Do not reboot the router after successfully completing the Quick-Start procedure. By default, the router reboots with the file named *config*, not the *startup.cfg* file that you just created. See Chapter 6, "Completing the Router Configuration," for instructions on testing the *startup.cfg* file before you save it as *config*.

Nortel Networks recommends that you immediately secure your router to prevent unauthorized access. See Chapter 7, "Securing the Router," for information.

Quick-Start Troubleshooting with the BCC

If the router cannot ping the workstation during the Quick-Start procedure, check the following:

- The network could be slow or disabled, or the ping test timed out. Continue checking the other items.
- Check the physical connections.
- If the workstation is a PC, a supported TCP/IP stack must be running for a successful ping. See Chapter 8, "Installing Site Manager on a PC," for information about TCP/IP stacks, adapters, and drivers.
- Verify the IP address of the router. Enter the **show ip interfaces** command at any BCC prompt to make sure that the physical interface is up and that the IP address is correct. For more information about the **show ip interfaces** command, see *Reference for BCC IP show Commands*.
- Verify the IP address and subnet mask address of the configuration workstation.
- If the workstation is on a different network, verify that routing is active. Enter the **show ip routes** command at any BCC prompt to examine the routing table and verify that there is a route or a default route to the network where the workstation is located. For more information about the **show ip routes** command, see *Reference for BCC IP show Commands*.

Note: If the installation failed and you must rerun the script, first reboot the router with the *ti.cfg* file.

Chapter 6
Completing the Router Configuration

This chapter provides an overview of the tools and procedures that you can use to complete the router's configuration. Refer to the following topics:

Topic	Page
Selecting a Configuration Tool	6-1
Completing the Configuration Procedure	6-2
Communicating with the Router Remotely	6-3

Selecting a Configuration Tool

Nortel Networks provides the following tools for configuring your router. See the Release Notes for information about the platforms, interfaces, and protocols that each tool supports.

- The BCC

  The BCC is a command-line interface for configuration. You can enhance your Quick-Start configuration with the BCC for the supported interfaces and protocols. Configuration files created with the BCC can be modified with other tools, but first make sure that you save the BCC configuration as a binary file.

  For more information, see *Using the Bay Command Console (BCC).*

- Site Manager

  Site Manager is a graphical user interface for configuration. If you need to install Site Manager, see the installation chapter for your workstation later in this guide (Chapters 8 through 12).

For information about using Site Manager, see *Configuring and Managing Routers with Site Manager.*

- NETarchitect

  NETarchitect integrates Site Manager's Configuration Manager tool with File Manager to help you store and distribute mutiple router files, and boot multiple routers.

  For more information, see *Configuring and Maintaining Networks with Optivity NETarchitect 2.1* in the Optivity® documentation set.

- Technician Interface

  The Technician Interface is a command-line interface for managing routers and setting MIB values. (BCC commands are gradually replacing Technician Interface functions.)

  For more information, see *Using Technician Interface Software*.

Completing the Configuration Procedure

The Quick-Start procedure creates a configuration file named *startup.cfg* on the router. The initial configuration is active in the router's memory.

You use a configuration tool to add protocols and ports to the initial configuration. After testing the new configuration, you save it as *config*, the router's default configuration file.

Note: Be sure to create and test a new *config* file as soon as you complete the Quick-Start procedure. By default the router boots with *config* unless you specify another file. It is important that you always keep a working, tested file named *config* to ensure that the router operates correctly.

The following steps outline the general procedure for modifying the initial configuration with your chosen tool:

1. **Make a backup copy of the *startup.cfg* file using the configuration tool.**
2. **Modify the *startup.cfg* file by adding interfaces and protocols.**
3. **Save the modified configuration as a test file, for example, *test.cfg*.**
4. **Boot the router with the test configuration file.**
5. **Verify that the router's new configuration works correctly.**

6. **Save the verified configuration file as *config*.**

   Always save a copy of the current *config* file before you overwrite it.

Communicating with the Router Remotely

In addition to the network connections you make to the router with tools such as Site Manager, you can also communicate with the router remotely using:

- Telnet connections
- Out-of-band connections

Telnet Connections

You can manage a router from a remote workstation by establishing a Telnet connection and using the router's Technician Interface and the BCC. See *Using Technician Interface Software* for information about establishing a Telnet session.

Out-Of-Band Connections

As a backup method of reaching the Technician Interface and the BCC, you can also access the router remotely through the modem port. This connection is called a remote out-of-band connection. *Out-of-band* refers to the fact that it is not dependent on a network connection, so that you can still communicate with your router even if the network is down.

See *Using Technician Interface Software* for information about modem connections and your installation guide for information abut connecting modems.

Chapter 7
Securing the Router

Nortel Networks recommends that you immediately secure your router to prevent unauthorized access. This chapter provides an overview of the security features and services that you can use:

Topic	Page
Assigning a Password to the Technician Interface	7-2
Securing New Routers with the BCC or the Installation Script	7-2
Setting Global IP Access Policies with the BCC	7-3
Restricting Read/Write Access with SNMP Communities	7-3
Setting Secure Mode	7-4
Authentication Failure Traps	7-5
Assigning SecurID to Telnet Connections	7-6
Turning Off FTP and Telnet on the Router	7-6
Using the Image Builder to Remove Services	7-6
Restricting Access to the HTTP Server	7-6
Configuring Data Encryption Services	7-7
Configuring RADIUS	7-7
Installing BaySecure FireWall-1	7-8
Configuring IP Security (IPsec)	7-8

Assigning a Password to the Technician Interface

The Technician Interface provides local and remote access to your router's file system. You should immediately add a security password for the administrator of the router's Technician Interface.

1. **Enter the password command for the Manager login:**

   password Manager

   The console displays the following message:

   ```
   Changing password for Manager
   Old password:
   ```

2. **Because there is no old password, press the Return key.**

   ```
   New Password:
   ```

3. **Enter the new password.**

   The password can have from 0 through 16 alphanumeric characters.

   ```
   Retype new password:
   ```

4. **Reenter your password at the prompt.**

   The console displays the following message:

   ```
   Manager password changed
   ```

See *Using Technician Interface Software* for instructions on setting passwords for users and additional information.

Securing New Routers with the BCC or the Installation Script

Although you can quick-start routers using either the BCC or the *install.bat* script, the BCC provides an operational advantage if you have security concerns.

By default, the BCC adds read-only access to the router. You must explicitly configure write access. After you quick-start the router, you can immediately use the BCC to change the global IP access policies and secure the router.

The *install.bat* script adds SNMP read-write access by default. You must then establish a Site Manager (or other configuration tool) session before you can add additional security for IP services.

See “Setting Global IP Access Policies with the BCC” and “Restricting Read/Write Access with SNMP Communities” for additional information.

Setting Global IP Access Policies with the BCC

The BCC allows you to create global IP access policies for routers that control access to specific IP services, including Telnet, FTP, TFTP, NTP, SNMP, and the HTTP Server.

You define a policy and its actions by setting BCC parameters. See the appendix “Configuring IP Global Access Policies” in *Configuring IP Utilities* for more information.

Restricting Read/Write Access with SNMP Communities

You can use either Site Manager or the BCC to control SNMP access to the router. You should restrict read/write access to the router as soon as possible by reconfiguring the SNMP communities.

When you add SNMP with the BCC, access is defined by default as read-only. You should immediately add managers to control any write access that you explicitly add.

By default, the Quick-Start installation script (*install.bat*) creates a read/write SNMP community named “public” with a wildcard manager (0.0.0.0) that allows universal read/write access. Nortel Networks *strongly* recommends that you use Site Manager or BCC commands to:

1. **Reconfigure the “public” community as read-only for universal access.**
2. **Create a read/write community with a unique name (for example, EASTBAY) and a manager list containing the IP addresses of the workstations that need read/write access to the router.**

See *Configuring SNMP, BootP, and DHCP Services* for more information about configuring SNMP. See *Using the Bay Command Console (BCC)* for information about BCC commands.

Setting Secure Mode

Nortel Networks routers have an optional security mechanism, called *secure mode*, that uses an encryption algorithm to prevent unauthorized SNMP SET requests to the MIB variables of the router.

In secure mode, when Site Manager issues the first SET request within an application, you must enter a key to allow Site Manager to operate in secure mode. A Site Manager SET request to the router includes the encrypted value of a counter. When the agent on the router receives the SET request, it compares the encrypted value to the value of its own counter plus 1. If the two counters match, the agent considers the SET request authentic, increments the counter by 2, stores it in encrypted form in the MIB, and sends it back to Site Manager.

Secure mode protects against these security violations:

- *Message stream modification*, in which an intruder reorders, delays, or replays SET requests to specify unauthorized management settings
- *Masquerade operations*, in which an intruder assumes the IP address of an authorized user to specify unauthorized management settings

Secure mode does not protect against the following security violations, which are beyond the scope of this proprietary interim security system:

- *Modification of information*, in which an intruder intercepts a packet, modifies its contents, and reinserts it into the message stream before the agent's counter increments
- *Disclosure*, in which an intruder observes which variables are being set

Enabling the security mechanism only minimally affects router performance. The security mechanism has no effect on the ability of Site Manager, or of any SNMP network manager, to monitor the router by performing GET, GET-NEXT, or trap functions.

Specifying Secure Mode

To set the router to secure mode:

1. **Set up private, read-write SNMP communities for your router using Site Manager.**

   You cannot use public communities with secure mode. See "Restricting Read/Write Access with SNMP Communities" on page 7-3 for instructions on changing SNMP communities.

2. **Using the Technician Interface on the router, enter the following command:**

   wfsnmpmode 3

   3 indicates that the router should operate using the proprietary security mechanism.

3. **Specify a password key for the encryption algorithm to use when it encrypts the security counters by entering the following command:**

   wfsnmpkey *<key>*

   key is the string of ASCII characters that you select to make up the encryption code for this router. The key can have up to six characters. The encryption algorithm uses the attributes of the key (size, range, and value) in the encryption process.

To turn off secure mode and revert to the default SNMP community security mode (called trivial mode), enter the following Technician Interface command:

wfsnmpmode 1

Authentication Failure Traps

The router generates an authentication failure trap when it receives an SNMP message from an SNMP manager falsely claiming to be in a particular community or specifying an unknown community.

To enable the authentication failure trap feature on the router, configure an SNMP community manager to receive the trap. (See *Configuring SNMP, BootP, and DHCP Services*.)

Assigning SecurID to Telnet Connections

You can enable password protection for your Telnet connections to the router using SecurID services. See *Using Technician Interface Software* for information about enabling SecurID services.

Turning Off FTP and Telnet on the Router

If you have local access to your router or do not need network access to maintain your router, consider turning off FTP and Telnet. Your router will be more secure without network access and will require less memory and processing overhead.

You can turn these services off using the BCC or Site Manager. See *Configuring IP Utilities* for instructions.

Using the Image Builder to Remove Services

The Image Builder tool provided with Site Manager allows you to modify the router software image. You can use the Image Builder tool to remove unwanted services and protocols, such as FTP, from the router. See *Configuring and Managing Routers with Site Manager* for more information.

Restricting Access to the HTTP Server

The HTTP Server uses the following Technician Interface logins and passwords to restrict access:

- The Manager login allows access to all services. To sign on as Manager on the HTTP Server, you must first add a password for Manager using the Technician Interface (see "Assigning a Password to the Technician Interface" on page 7-2).
- The User login prohibits access to the SNMP community page and prevents changes to the ports and protocols on the router. A password is not required.
- The Operator login prohibits access to the SNMP community page, but allows you to make changes to the ports and protocols on the router.

For complete information about configuring access to the HTTP (Web) Server, see *Managing Routers Using the HTTP Server.*

Configuring Data Encryption Services

Nortel Networks data encryption services enable you to protect sensitive traffic on your network. Encryption prevents unauthorized persons from reading, changing, or replaying data that travels between Nortel Networks routers.

Data encryption services include:

- Software-based encryption for PPP dedicated links for the BN, AN, ARN, and ASN routers; System 5000 router modules; and all serial interfaces. This includes encryption on multiline and multilink.
- Software-based encryption for frame relay circuits that have one permanent virtual circuit (PVC) per service record. This includes encryption on multiline.
- Software-based encryption for dial-on-demand, dial backup, and bandwidth-on-demand services, allowing you to protect sensitive data across switched circuits. If you configure encryption to work with dial backup service, encrypted data travels over the backup circuit if the primary line fails.
- Encryption configurable on a line or circuit basis.
- Encryption with or without data compression.

See *Configuring Data Encryption Services* for more information**.**

Configuring RADIUS

Remote Authentication Dial-In User Service (RADIUS) defines a method of centralizing authentication and accounting information for networks with many remote dial-in users. By placing authentication and accounting functions in one central location, you can improve security and better manage large networks.

In a network using RADIUS, the router is the RADIUS client. The client is the connection point between remote users and a RADIUS server. The server has the information that it needs to identify remote users and to keep accounting information for each call.

For more information, see *Configuring RADIUS*.

Installing BaySecure FireWall-1

For additional network security, Nortel Networks provides BaySecure™ FireWall-1 software. This software integrates the Check Point FireWall-1 network security engine from Check Point Software Technologies Ltd into the Nortel Networks router software to create a security system that provides fully secure, antispoofing communication for all Internet applications and services. For more information, see *Configuring BaySecure FireWall-1*.

To purchase or learn more about BaySecure FireWall-1 software, call Nortel Networks Sales at 1-800-8-BAYNET.

Configuring IP Security (IPsec)

IP Security (IPsec) is a set of emerging standards being developed by the IETF to provide secure communication over IP networks. These standards are designed to ensure secure, private communication for remote access, extranet, and intranet virtual private networks (VPNs). IPsec is designed to work flexibly with different encryption algorithms, authentication methods, and key exchange methods.

The Nortel Networks implementation of IPsec provides network layer (layer 3) security services for WAN communications on AN, ARN, BN, ASN, and System 5000 routers. For more information about IPsec and instructions on how to configure it on a router, see *Configuring IPsec Services.*

Chapter 8
Installing Site Manager on a PC

Site Manager is a graphical user interface for router configuration and management over an IP network. To install Site Manager on a PC running Windows 95 or Windows 98, review the following topics:

Topic	Page
System Requirements	8-1
Updating TCP/IP, Network Adapters, and Drivers	8-2
Loading and Starting Site Manager Software	8-4

System Requirements

To run Site Manager, your PC must meet the following hardware and software requirements:

- 486 PC (Pentium PC recommended)
- Microsoft Windows 95 or Windows 98
- 16 MB of RAM (minimum)
- 85 MB of free disk space
- Microsoft TCP/IP for Windows 95 or 98 and compatible network adapters and driver
- CD-ROM drive
- VGA monitor (SuperVGA monitor recommended)

Updating TCP/IP, Network Adapters, and Drivers

Site Manager for Windows 95 or 98 requires the Microsoft TCP/IP protocol stack provided with Windows 95 or 98 and a compatible network adapter and driver.

If you purchased a PC with Windows 95 or 98 and a network adapter installed, most likely you have the correct TCP/IP protocol stack, network adapter, and driver. Go to "Testing TCP/IP" on page 8-3.

If you need to upgrade from Windows 3.1 to Windows 95 or 98, first uninstall any existing 16-bit TCP/IP stack, such as Distinct TCP/IP Run Time. Otherwise, Windows 95 or 98 will install that stack instead of the Microsoft TCP/IP protocol stack.

If you already upgraded from Windows 3.1 to Windows 95 or 98 and the upgrade kept an existing 16-bit TCP/IP stack, such as Distinct TCP/IP Run Time, you must uninstall the 16-bit TCP/IP stack before adding the Microsoft TCP/IP protocol stack.

To uninstall a 16-bit TCP/IP stack, refer to the TCP/IP provider's documentation and support for help in removing the stack's path statements, services file, and WINSOCK.DLL files dated prior to July 11, 1995 (the date of the WINSOCK.DLL file installed by Windows 95 or 98).

To add or update a protocol, network adapter, or driver, refer to the appropriate documentation and support from Microsoft and the adapter manufacturer. Protocol and driver updates are added from the Network option of the Control Panel. New network adapters and their drivers are added from the Add New Hardware option of the Control Panel.

Windows 95 or 98 attempts to match a driver to the network adapter installed on your PC. If it cannot match a compatible driver, you need to update the driver. Contact the adapter manufacturer for the latest drivers. Microsoft and other Windows 95 or 98 Web sites may also have updated drivers.

Refer to the Resource Kit that came with your version of Windows for additional technical information about these issues. A hard copy is available from Microsoft Press.

Preparing the Network Control Panel

In addition to obtaining the supported TCP/IP protocol, network adapters, and drivers, you need to configure the Network option of the Control Panel with the required information for your network.

Choose Control Panel > Network > TCP/IP > Properties to display the TCP/IP properties menu, which contains tab windows for the following information:

- IP address
- WINS configuration
- Gateway
- Bindings
- Advanced
- DNS configuration

Refer to your Windows 95 or 98 Help or documentation for information about setting the parameters in these windows.

Testing TCP/IP

Before installing Site Manager, send a ping request to the router to make sure that your computer's TCP/IP function is running.

1. **From the Start menu, choose Programs > MS-DOS Prompt.**
2. **Enter the following command to ping your router:**

   ping *<ip_address>*

   ip_address is the IP address of your router.

   Messages appear at the prompt indicating whether replies were received. Replies verify that your Microsoft TCP/IP protocol stack is functional.

Loading and Starting Site Manager Software

Caution: If you are installing a new version of Site Manager on a PC, be aware that the installation will overwrite the *c:\windows\siteman.ini* file. If you plan to run more than one version of Site Manager on the same PC, copy the existing *siteman.ini* file under a new name, then edit the newly installed *siteman.ini* file to include the information from the previous versions.

To install Site Manager software from a CD:

1. **Insert the Nortel Networks Site Manager CD into your CD-ROM drive.**
2. **Access the Run window by choosing Run from the Start menu.**
3. **Type the CD-ROM drive, path, and executable file:**

   *<CD-ROM_drive>***:\ms_win\setup.exe**

   The D: drive is usually the CD-ROM drive.
4. **Click on OK.**

   You can also use the Browse button, Windows Explorer, or My Computer to select the CD-ROM drive and the path to the *ms_win* directory and then click on *setup.exe*.

   The installation script prompts you for the directory in which you want to install Site Manager.
5. **Enter the name of the directory in which to install Site Manager, or accept the default, *c:\WF*.**

   The Site Manager files are installed in the chosen directory. When the installation is finished, the following prompt appears:

   ```
   Create Windows program group/items automatically?
   ```
6. **To add Site Manager as a selection on the Start > Programs menu, click on Yes.**

   This option allows you to start Site Manager after installation by choosing Start > Programs > Site Manager > PC_Site Manager.

   If you do not want Site Manager to appear as a selection on the Start > Programs menu, click on No.

   The following prompt appears:

   ```
   Do you want to start Site Manager now?
   ```

7. **Click on Yes to start Site Manager.**

   The Router Connection Options window opens.

8. **Enter the IP address and SNMP community of the initial router interface that you created during the Quick-Start procedure.**

9. **Click on OK to display the main Site Manager window (Figure 8-1).**

After you successfully install and start Site Manager, see *Configuring and Managing Routers with Site Manager* for more information.

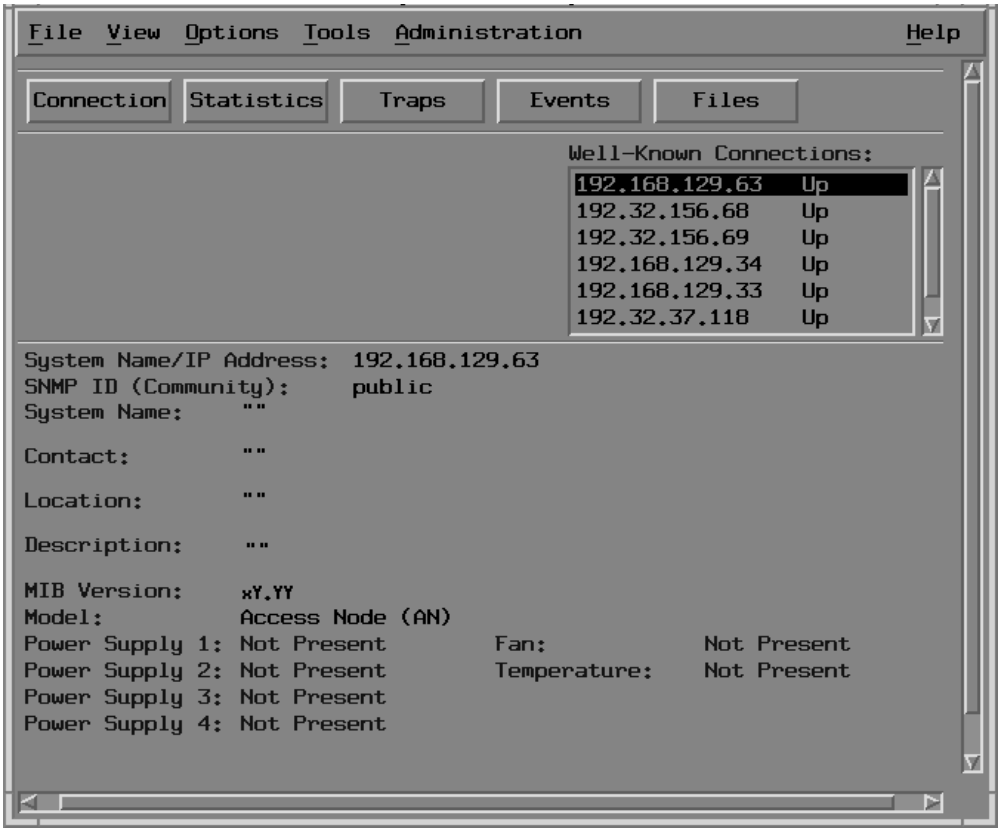

Figure 8-1. Site Manager Window

Chapter 9
Installing Site Manager on a Workstation Running Windows NT

Site Manager is a graphical user interface for router configuration and management over an IP network. To install Site Manager on a workstation running Windows NT, review the following topics:

Topic	Page
System Requirements	9-1
Preparing the Network Control Panel	9-2
Testing TCP/IP	9-2
Loading and Starting Site Manager Software	9-2

System Requirements

Site Manager for the Windows NT operating system runs in 16-bit mode. Your workstation must meet the following hardware and software requirements:

- 486/100 workstation (Pentium workstation recommended)
- Microsoft Windows NT Version 4.0
- 16 MB of RAM (minimum)
- 85 MB of free disk space
- TCP/IP and compatible network adapters and driver
- CD-ROM drive
- VGA monitor (SuperVGA monitor recommended)

Preparing the Network Control Panel

You need to configure the Network option of the Control Panel with the required information for your network. Refer to Windows NT Help and documentation or commercial publications such as *Microsoft Windows NT Resource Kit* if you need technical information about setting the Network options.

For the TCP/IP Protocol option, you need to set the following information:

- IP address
- DNS
- WINS address
- Routing

Testing TCP/IP

Before installing Site Manager, send a ping request to the router to make sure that your computer's TCP/IP function is running.

1. **From the Start menu, choose Programs > MS-DOS Prompt.**
2. **Enter the following command to ping your router:**

   ping *<ip_address>*

   ip_address is the IP address of your router.

   Messages appear at the prompt indicating whether replies were received. Replies verify that your Microsoft TCP/IP protocol stack is functional.

Loading and Starting Site Manager Software

Caution: If you are installing a new version of Site Manager, be aware that the installation will overwrite the *c:\windows\siteman.ini* file. If you plan to run more than one version of Site Manager on the same workstation, copy the existing *siteman.ini* file under a new name, then edit the newly installed *siteman.ini* file to include the information from the previous versions.

To install Site Manager software from a CD:

1. **Insert the Nortel Networks Site Manager CD into your CD-ROM drive.**

2. **Access the Run window by choosing Run from the Start menu.**
3. **Type the CD-ROM drive, path, and executable file:**

   <CD-ROM_drive>:\ms_win\setup.exe

   The D: drive is usually the CD-ROM drive.
4. **Click on OK.**

   You can also use the Browse button, Windows Explorer, or My Computer to select the CD-ROM drive and the path to the *ms_win* directory and then click on *setup.exe*.

   If the TCP/IP services file is not located in the default directory, (*C:\WINNT\system32\drivers\etc*), the installation script prompts you for the directory.
5. **If prompted to do so, enter the path to the directory where the TCP/IP services file is located.**

Note: The TCP/IP services file is different from the *services.exe* file.

The installation script prompts you for the directory in which you want to install Site Manager.

6. **Enter the name of the directory in which to install Site Manager, or accept the default, *c:\WF*.**

   The Site Manager files are installed in the chosen directory. When the installation is finished, the following prompt appears:

   ```
   Create Windows program group/items automatically?
   ```
7. **To add Site Manager as a selection on the Start > Programs menu, click on Yes.**

   This option allows you to start Site Manager after installation by choosing Start > Programs > Site Manager > PC_Site Manager.

   If you do not want Site Manager to appear as a selection on the Start > Programs menu, click on No.

   The following prompt appears:

   ```
   Do you want to start Site Manager now?
   ```

8. **Click on Yes to start Site Manager.**

   The Router Connection Options window opens.

9. **Enter the IP address and SNMP community of the initial router interface that you created during the Quick-Start procedure.**

10. **Click on OK to display the main Site Manager window (Figure 9-1).**

After you successfully install and start Site Manager, see *Configuring and Managing Routers with Site Manager* for more information.

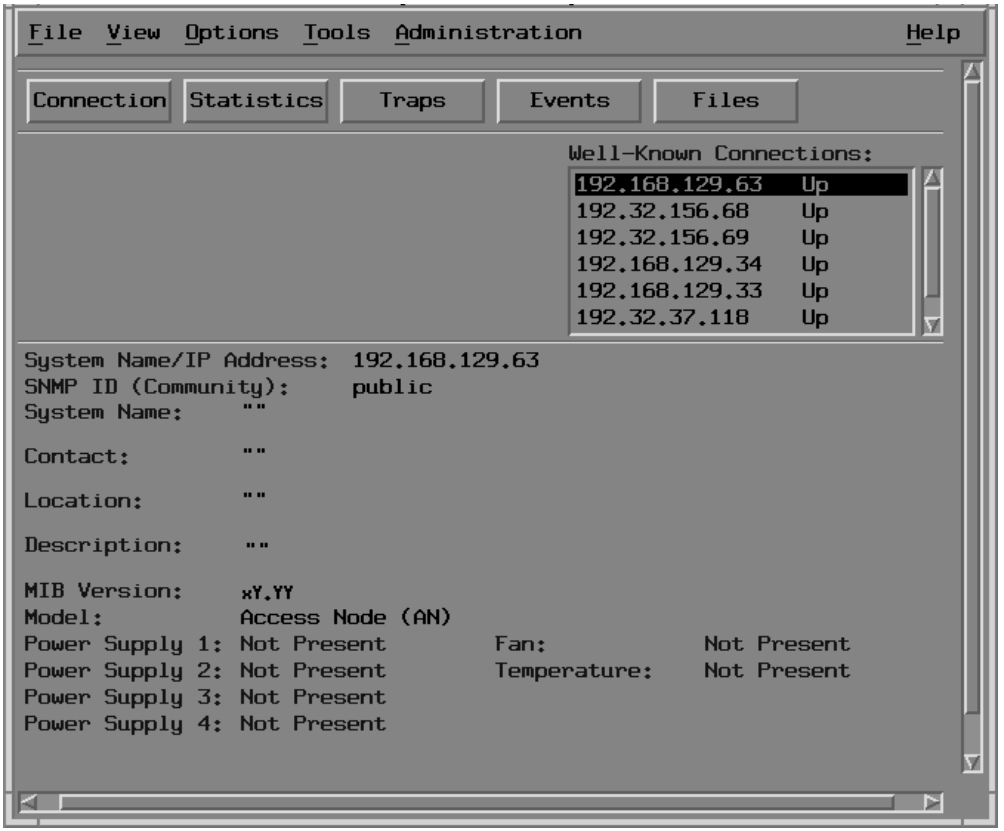

Figure 9-1. Site Manager Window

Chapter 10
Installing Site Manager on a SPARCstation

Site Manager is a graphical user interface for router configuration and management over an IP network. To install Site Manager on a SPARCstation, review the following topics:

Topic	Page
System Requirements	10-2
Setting Up the SPARCstation	10-2
Loading Site Manager Software	10-3
Setting Up Site Manager User Accounts	10-5
Verifying Site Manager Installation	10-6
Starting Site Manager	10-6

System Requirements

To run Site Manager, your SPARCstation must meet the following hardware and software requirements:

- Supported workstations:
  - -- SPARCstation 10, 20
  - -- UltraSPARC
- Supported operating system: Solaris 2.5.1 and 2.6
- Window environment:
  - -- CDE 1.0.1
  - -- OpenWindows 3.5
- 32 MB of RAM (64 MB recommended)
- 145 MB of disk space
- 32 MB of swap space
- Network adapter appropriate for your network
- CD-ROM drive

Setting Up the SPARCstation

Before you load Site Manager software on your SPARCstation, do the following:

1. **Log in to the SPARCstation as root (or enter `su root`).**
2. **Edit the *`/etc/services`* system file (on each host device) to add the following lines at the end of the file:**

   ```
   snmp 161/udp
   snmp-trap 162/udp
   ```

   You can use any text editor to edit the file. The first line associates the service name **snmp** with UDP port number 161 on this host device. The second line associates the service name **snmp-trap** with UDP port number 162.
3. **Save *`/etc/services`* and exit from the text editor.**

Loading Site Manager Software

Load Site Manager software on the SPARCstation as follows:

- Mount the CD-ROM.
- Install the software.
- Unmount the drive.

Note: The command for mounting the CD-ROM varies depending on your system, for example, the number of CD-ROM drives. If the suggested mount command fails, consult your operating system documentation.

Mounting the CD-ROM

To mount the CD-ROM, insert the appropriate CD and drive tray into the CD-ROM drive.

The Volume Manager automatically mounts the CD onto */cdrom/release_1400*. If the CD does not automatically mount, stop the *vold* daemon and manually mount the CD by following these instructions:

1. **Log in as root by entering:**

   su

2. **At the password prompt, enter your root password.**

3. **Display the daemon's process ID by entering:**

   ps -ef | grep vold

4. **If there is a process running for the *vold* daemon, enter:**

   kill *<process_id>*

5. **If a subdirectory or file system does not already exist for the CD, create one by entering:**

   mkdir /cdrom

6. **Mount the CD by entering:**

   mount -F hsfs -o ro /dev/dsk/*<cd_address>* **/cdrom**

Installing the Software

To install Site Manager software:

1. **As root, change to the CD-ROM mountpoint by entering:**

   cd /cdrom

   If you are running the *vold* daemon, enter:

   cd /cdrom/release_1400

2. **Run the script to load Site Manager software by entering:**

   . /install.sh

   The installation process does the following:

   - Lists the directories that contain enough space to install Site Manager. You can then specify the directory that you want to use.
   - Executes the Site Manager installation script, *WFSM_INSTALL*.

   When the installation is finished, the script displays the message:

   `Site Manager Installation Complete.`

   Additional messages about your SPARCstation environment may appear.

Unmounting the CD-ROM

To unmount the CD-ROM, enter:

cd /
umount /cdrom

For CDs automatically mounted on a CD-ROM drive, enter:

cd /
eject cdrom

Setting Up Site Manager User Accounts

To set up individual Site Manager users on the SPARCstation:

1. **Press [Control]-d to exit the root account.**
2. **Log in to the user account.**
3. **If this is the first time that you installed Site Manager, create the directory in which to install the Site Manager Image Builder application by entering:**

   mkdir $HOME/.builder_dir

4. **Edit the user account setup file as follows:**

   - If you use the C shell *(csh)* or clones, add the following lines to *.cshrc*:

     set path = ($path /usr/wf/bin)
     setenv WF_SMPATH /usr/wf
     setenv SMTERM X
     setenv SM_CONFIGS *<directory_where_config_files_are_stored>*
     setenv BUILDER_DIR $HOME/.builder_dir

Note: If the shell variable path is already set in some other line of the *.cshrc* file, add these new lines immediately after the last `set path` line.

   - If you use the Bourne shell (*sh*) or clones, add the following lines to *.profile*:

     PATH=$PATH:/usr/wf/bin
     WF_SMPATH=/usr/wf
     SMTERM=X
     SM_CONFIGS=*<directory_where_config_files_are_stored>*
     BUILDER_DIR=$HOME/.builder_dir
     export WF_SMPATH SMTERM SM_CONFIGS BUILDER_DIR

5. **Log out of the user account.**

Repeat steps 1 through 5 for each user account that needs to run Site Manager.

Verifying Site Manager Installation

To verify the Site Manager installation and environment:

1. **Log in to a user account that you set up for Site Manager.**
2. **Start the window environment (CDE or OpenWindows).**
3. **Verify the Site Manager installation by entering:**

   wfchkinst

   If the installation was successful, the workstation displays the message:

   ```
   Installation is complete and correct!
   ```

4. **Verify the Site Manager environment by entering:**

   wfchkenv

   If the environment is correctly configured, the workstation displays the message:

   ```
   Your environment seems to have been set up correctly.
   ```

Repeat steps 1 through 4 for each user account that has Site Manager installed.

Note: If your environment variables are incorrect, you receive an error message to reset the variables.

Starting Site Manager

To start the Site Manager application:

1. **Log in with a user account that has been set up for Site Manager operation.**
2. **Start the window environment, for example, CDE.**
3. **Change to a directory with read/write privileges where Site Manager can save configuration and other files.**

   For example, the following command changes to the directory */home/siteman/config_files*:

   cd /home/siteman/config_files

4. **Activate Site Manager by entering the following command:**

   wfsm -a *<router_IP_address>* **&**

   router_IP_address is the IP address of the router's initial interface.

   For example, the following command starts Site Manager and connects to a router with the IP address 192.168.129.63:

   wfsm -a 192.168.129.63 &

   The Site Manager window opens (Figure 10-1).

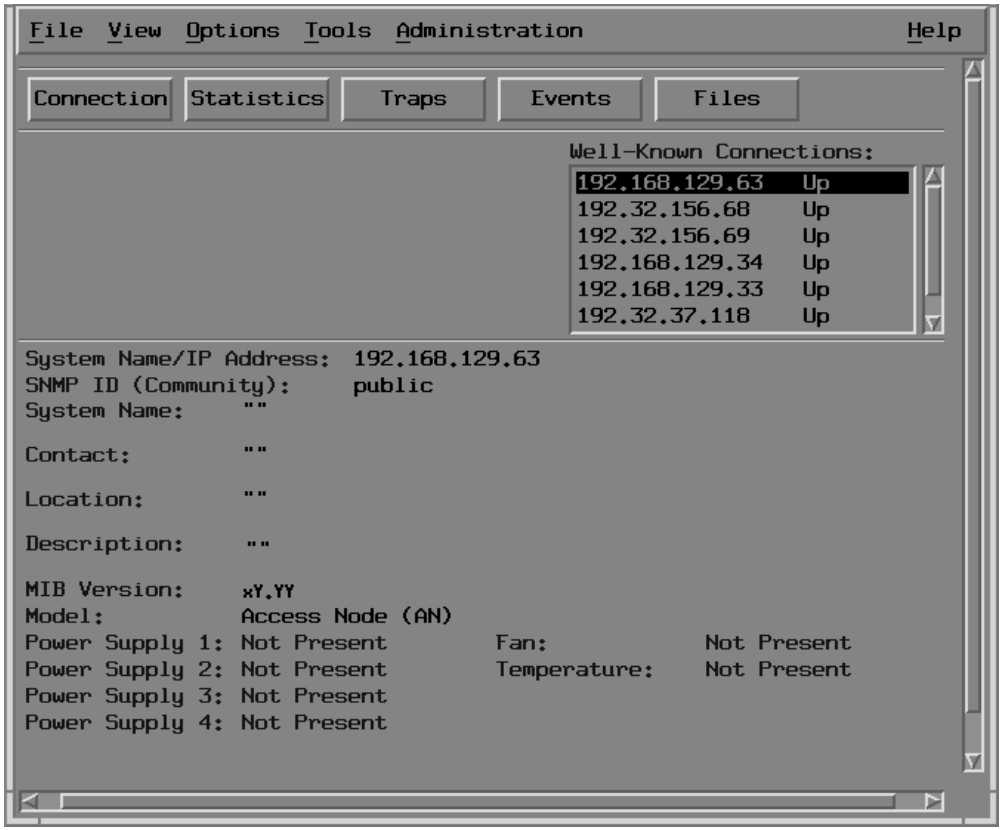

Figure 10-1. Site Manager Window

After you successfully install and start Site Manager, see *Configuring and Managing Routers with Site Manager* for more information.

Starting Site Manager from SunNet Manager

After you install Site Manager on a workstation running SunNet Manager or Domain Manager, you must exit SunNet Manager or Domain Manager and run the **snm -i** command from the command line to integrate Site Manager and update the schema in SunNet Manager or Domain Manager.

To start a Site Manager session on a workstation running SunNet Manager or Domain Manager:

1. **Open a view containing the icon of a router that you want to configure using Site Manager.**
2. **Click on the icon of the router that you want to configure.**
3. **From the Tools menu, choose Site Manager (Figure 10-2).**

   The Site Manager window opens.

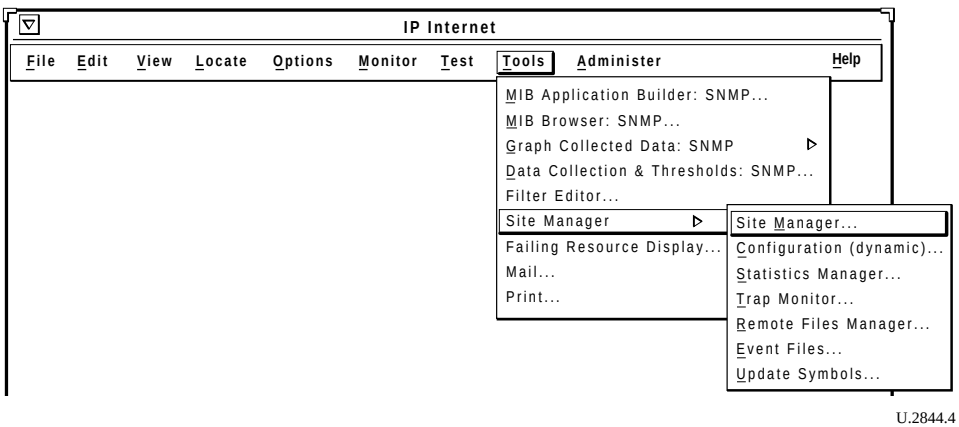

Figure 10-2. Starting a Site Manager Session from SunNet Manager

Starting Site Manager from OpenView

Read this section if you plan to install or are currently running the HP OpenView application on your SPARCstation.

After you install Site Manager on a workstation running HP OpenView, exit HP OpenView and enter **ovw -fields** at the command line to integrate Site Manager with the OpenView application and to update the symbols. Do this instead of using the Update Symbols option on the OpenView Site Manager menu.

To start a Site Manager session from the IP Internet window menu bar in OpenView:

1. **Open a view containing the icon of the router that you want to configure using Site Manager.**

   The IP Internet window opens with a map of your internetwork.

2. **Click on the icon of the router that you want to configure.**

3. **From the Tools menu, choose Site Manager (Figure 10-3).**

   The Site Manager menu opens with a list of tools.

4. **If the Site Manager tools are dimmed, delete the router from OpenView so that it can be rediscovered.**

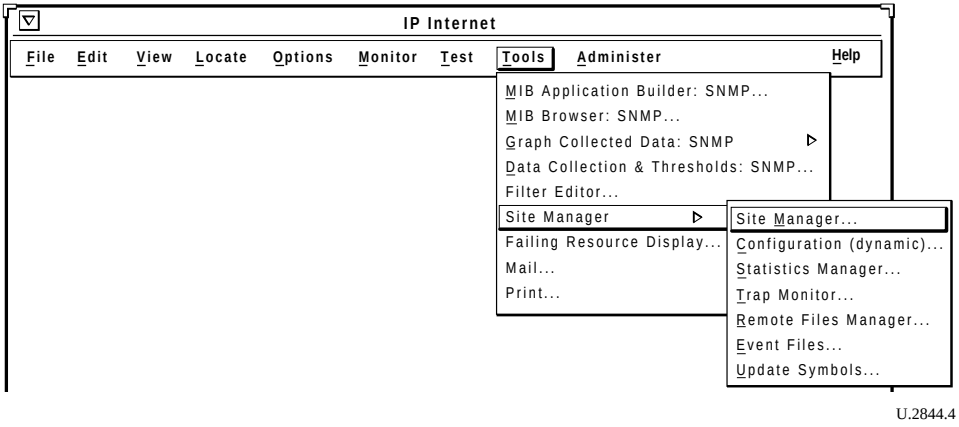

Figure 10-3. Starting a Site Manager Session from OpenView

If you install OpenView *after* you install Site Manager software, follow these steps to integrate Site Manager with the OpenView application:

1. **Change to the */usr/wf* directory.**

2. **Reexecute the Site Manager installation script by entering:**

   . /WFSM_INSTALL

Follow these steps any time that you reinstall OpenView.

Chapter 11
Installing Site Manager on an IBM Workstation

Site Manager is a graphical user interface for router configuration and management over an IP network. To install Site Manager on an IBM RS/6000 or PowerPC workstation, review the following topics:

Topic	Page
System Requirements	11-2
Loading Site Manager Software	11-2
Setting Up Site Manager User Accounts	11-4
Verifying Site Manager Installation	11-5
Starting Site Manager	11-5

System Requirements

To run Site Manager, your IBM workstation must meet the following hardware and software requirements:

- Supported workstations:
  - -- RS/6000 340, 370
  - -- PowerPC
- Supported operating system: IBM AIX Version 4.2
- Window environment:
  - -- CDE 1.0.1
  - -- AIX Motif 1.2
- 32 MB of RAM (64 MB recommended)
- 140 MB of disk space
- 32 MB of swap space (64 MB recommended; use 96 MB of swap space with the NetView for AIX application)
- Network adapter appropriate for your network
- CD-ROM drive

Loading Site Manager Software

Load Site Manager software on the IBM workstation as follows:

- Mount the CD-ROM.
- Install the software.
- Unmount the drive.

Note: The command for mounting the CD-ROM varies depending on your system, for example, the number of CD-ROM drives. If the suggested mount command fails, consult your operating system documentation.

Mounting the CD-ROM

To mount the CD-ROM:

1. **Insert the appropriate CD and drive tray into the CD-ROM drive.**
2. **Log in as root by entering:**

   su
3. **At the password prompt, enter your root password.**
4. **If a subdirectory or file system does not already exist for the CD, create one by entering:**

   crfs -v cdrfs -p ro -d'cd0' -m /cdrom -A'no' -t'no'
5. **Mount the CD-ROM by entering:**

   mount -o ro -v cdrfs /dev/*<cd_address>* **/cdrom**

Installing the Software

To install Site Manager software:

1. **As root, change to the CD-ROM mountpoint by entering:**

   cd /cdrom
2. **Run the script to load Site Manager software by entering:**

   ./install.sh

   The installation process does the following:

   - Lists the directories that contain enough space to install Site Manager. Accept the default or specify the directory that you want to use.
   - Executes the Site Manager installation script, *WFSM_INSTALL*.

   When the installation is finished, the script displays the message:

   ```
   Site Manager Installation Complete.
   ```

Unmounting the CD-ROM

To unmount the CD-ROM, enter:

```
cd /
umount /cdrom
```

Setting Up Site Manager User Accounts

To set up individual Site Manager users on the IBM workstation:

1. **Press [Control]-d to exit the root account.**
2. **Log in to the user account.**
3. **Create the directory for the Site Manager Image Builder application by entering:**

   mkdir $HOME/.builder_dir

4. **Edit the user account setup file as follows:**

   - If you use the C shell *(csh)* or clones, add the following lines to *.cshrc*:

     set path = ($path /usr/wf/bin)
     setenv WF_SMPATH /usr/wf
     setenv SMTERM X
     setenv SM_CONFIGS *<directory_where_config_files_are_stored>*
     setenv BUILDER_DIR $HOME/.builder_dir

Note: If the shell variable path is already set in some other line of the *.cshrc* file, add these new lines immediately after the last `set path` line.

   - If you use the Bourne shell (*sh*) or clones, add the following lines to *.profile*:

     PATH=$PATH:/usr/wf/bin
     WF_SMPATH=/usr/wf
     SMTERM=X
     SM_CONFIGS=*<directory_where_config_files_are_stored>*
     BUILDER_DIR=$HOME/.builder_dir
     export WF_SMPATH SMTERM SM_CONFIGS BUILDER_DIR

5. **Log out of the user account.**

Repeat steps 1 through 5 for each user account that needs to run Site Manager.

Verifying Site Manager Installation

To verify the Site Manager installation and environment:

1. **Log in to a user account that you set up for Site Manager.**
2. **Start the window environment.**
3. **Verify the Site Manager installation by entering:**

   wfchkinst

   If the installation was successful, the workstation displays the message:

   ```
   Installation is complete and correct!
   ```

4. **Verify the Site Manager environment by entering:**

   wfchkenv

   If the environment is correctly configured, the workstation displays the message:

   ```
   Your environment seems to have been set up correctly.
   ```

Repeat steps 1 through 4 for each user account that has Site Manager installed.

Note: If your environment variables are incorrect, you receive an error message to reset the variables.

Starting Site Manager

To start the Site Manager application:

1. **Log in with a user account that has been set up for Site Manager operation.**
2. **Start the window environment.**
3. **Change to a directory with read/write privileges where Site Manager can save configuration and other files.**

   For example, the following command changes to the directory */home/siteman/config_files*:

   cd /home/siteman/config_files

4. **Activate Site Manager by entering the following command:**

   wfsm -a *<router_IP_address>* **&**

   router_IP_address is the IP address of the router's initial interface.

   For example, the following command starts Site Manager and connects to a router with the IP address 192.168.129.63:

   wfsm -a 192.168.129.63 &

   The Site Manager window opens (Figure 11-1).

After you successfully install and start Site Manager, see *Configuring and Managing Routers with Site Manager* for more information.

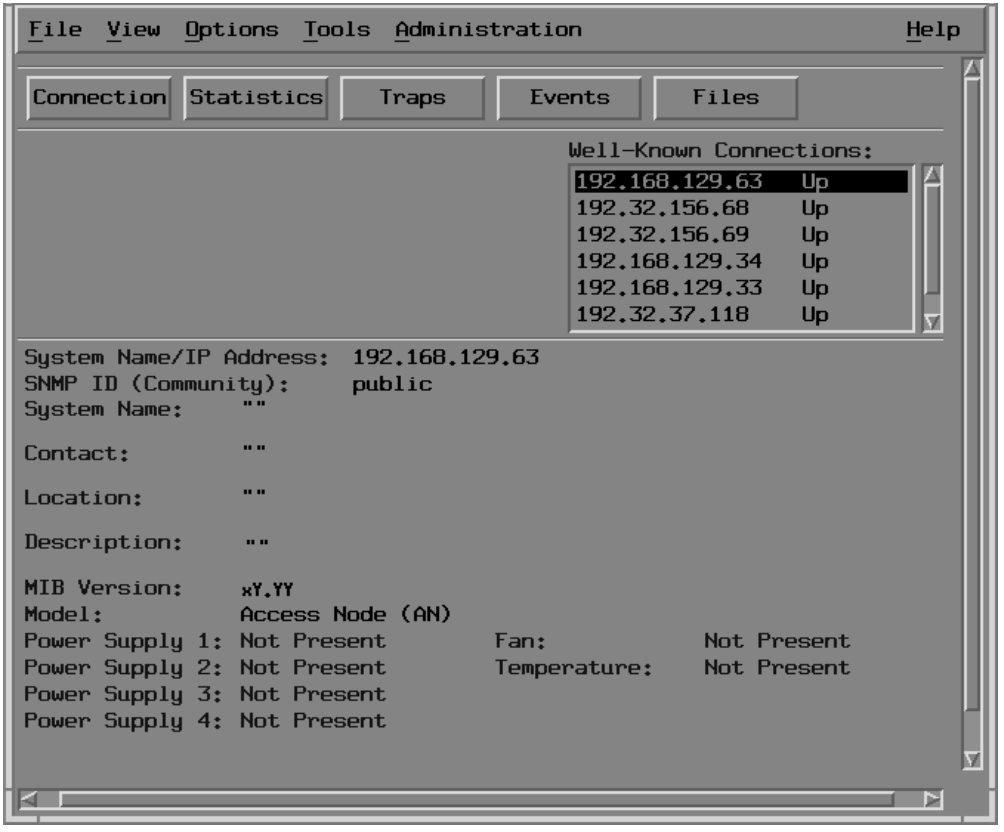

Figure 11-1. Site Manager Window

Starting Site Manager from NetView for AIX

Read this section if you plan to install or are currently running the NetView for AIX application on your IBM workstation.

After you install Site Manager on a workstation running NetView, exit NetView and enter **ovw -fields** at the command line to integrate Site Manager with the NetView application and to update the symbols. Do this instead of using the Update Symbols option on the NetView Site Manager menu.

To start a Site Manager session from the IP Internet window menu bar in NetView:

1. **Open a view containing the icon of the router that you want to configure using Site Manager.**

   The IP Internet window opens with a map of your internetwork.

2. **Click on the icon of the router that you want to configure.**

3. **From the Tools menu, choose Site Manager (Figure 11-2).**

   The Site Manager menu opens with a list of tools.

4. **If the Site Manager tools are dimmed, delete the router from NetView so that it can be rediscovered.**

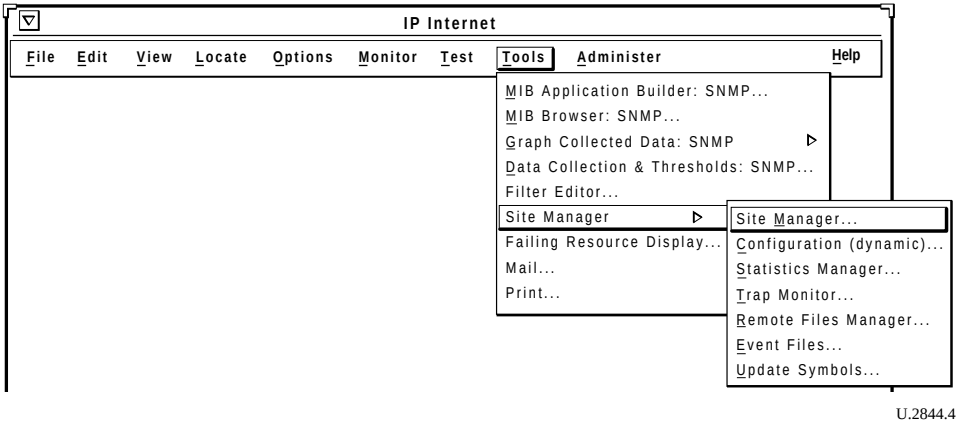

Figure 11-2. Starting a Site Manager Session from NetView

If you install NetView for AIX *after* you install Site Manager software, follow these steps to integrate Site Manager with the NetView for AIX application:

1. **Change to the */usr/wf* directory.**
2. **Reexecute the Site Manager installation script by entering:**

   . /WFSM_INSTALL

Follow these steps any time that you reinstall NetView for AIX.

Chapter 12
Installing Site Manager on an HP 9000 Workstation

Site Manager is a graphical user interface for router configuration and management over an IP network. To install Site Manager on an HP 9000 workstation, review the following topics:

Topic	Page
System Requirements	12-2
Loading Site Manager Software	12-2
Setting Up Site Manager User Accounts	12-4
Verifying Site Manager Installation	12-5
Starting Site Manager	12-5

System Requirements

To run Site Manager, your HP 9000 workstation must meet the following hardware and software requirements:

- Supported workstations: HP 9000 Series 700 and 800
- Supported operating system: HP-UX 10.20, including the complete *services* (network services) directory
- Window environment: CDE 1.0.1
- 32 MB of RAM
- 145 MB of free disk space
- 32 MB of swap space (64 MB recommended)
- Network adapter appropriate for your network
- CD-ROM drive

Loading Site Manager Software

Load Site Manager software on the HP 9000 workstation as follows:

- Mount the CD-ROM.
- Install the software.
- Unmount the drive.

Note: The command for mounting the CD-ROM varies depending on your system, for example, the number of CD-ROM drives. If the suggested mount command fails, consult your operating system documentation.

Mounting the CD-ROM

To mount the CD-ROM:

1. **Insert the appropriate CD and drive tray into the CD-ROM drive.**
2. **Log in as root by entering:**

   su
3. **At the password prompt, enter your root password.**

4. **If a subdirectory or file system does not already exist for the CD, create one by entering:**

   mkdir /cdrom

5. **Mount the CD-ROM by entering:**

   mount -r -t cdfs -o cdcase /dev/dsk/*<cd_address>* **/cdrom**

Installing the Software

To install Site Manager software:

1. **As root, change to the CD-ROM mountpoint by entering:**

   cd /cdrom

2. **Run the script to load Site Manager software by entering:**

   ./install.sh

   If this command does not work, mount the CD-ROM drive again, using the command in step 5 on this page.

   The installation process does the following:

   - Lists the directories that contain enough space to install Site Manager. Accept the default or specify the directory that you want to use.
   - Executes the Site Manager installation script, *WFSM_INSTALL*.

   When the installation is finished, the script displays the message:

   `Site Manager Installation Complete.`

Note: If you see the message `OvwDbInit failed`, OpenView is not installed. See "Starting Site Manager from OpenView" on page 12-7 for information.

Unmounting the CD-ROM

To unmount the CD-ROM, enter:

cd /
umount /cdrom

Setting Up Site Manager User Accounts

To set up individual Site Manager users on the HP 9000 workstation:

1. **Press [Control]-d to exit the root account.**
2. **Log in to the user account.**
3. **Create the directory for the Site Manager Image Builder application by entering:**

   mkdir $HOME/.builder_dir

4. **Edit the user account setup file as follows:**

   - If you use the C shell *(csh)* or clones, add the following lines to *.cshrc*:

     set path = ($path /usr/wf/bin)
     setenv WF_SMPATH /usr/wf
     setenv SMTERM X
     setenv SM_CONFIGS *<directory_where_config_files_are_stored>*
     setenv BUILDER_DIR $HOME/.builder_dir

Note: If the shell variable path is already set in some other line of the *.cshrc* file, add these new lines immediately after the last `set path` line.

   - If you use the Bourne shell *(sh)* or clones, add the following lines to *.profile*:

     PATH=$PATH:/usr/wf/bin
     WF_SMPATH=/usr/wf
     SMTERM=X
     SM_CONFIGS=*<directory_where_config_files_are_stored>*
     BUILDER_DIR=$HOME/.builder_dir
     export WF_SMPATH SMTERM SM_CONFIGS BUILDER_DIR

5. **Log out of the user account.**

Repeat steps 1 through 5 for each user account that needs to run Site Manager.

Verifying Site Manager Installation

To verify the Site Manager installation and environment:

1. **Log in to a user account that you set up for Site Manager.**
2. **Start the window environment.**
3. **Verify the Site Manager installation by entering:**

   wfchkinst

   If the installation was successful, the workstation displays the message:

   ```
   Installation is complete and correct!
   ```

4. **Verify the Site Manager environment by entering:**

   wfchkenv

   If the environment is correctly configured, the workstation displays the message:

   ```
   Your environment seems to have been set up correctly.
   ```

Repeat steps 1 through 4 for each user account that has Site Manager installed.

Note: If your environment variables are incorrect, you receive an error message to reset the variables.

Starting Site Manager

To start the Site Manager application:

1. **Log in with a user account that has been set up for Site Manager operation.**
2. **Start the window environment.**
3. **Change to a directory with read/write privileges where Site Manager can save configuration and other files.**

   For example, the following command changes to the directory */home/siteman/config_files*:

   cd /home/siteman/config_files

4. **Activate Site Manager by entering the following command:**

   wfsm -a *<router_IP_address>* **&**

   router_IP_address is the IP address of the router's initial interface.

   For example, the following command starts Site Manager and connects to a router with the IP address 192.168.129.63:

   wfsm -a 192.168.129.63 &

   The Site Manager window opens (Figure 12-1).

After you successfully install and start Site Manager, see *Configuring and Managing Routers with Site Manager* for more information.

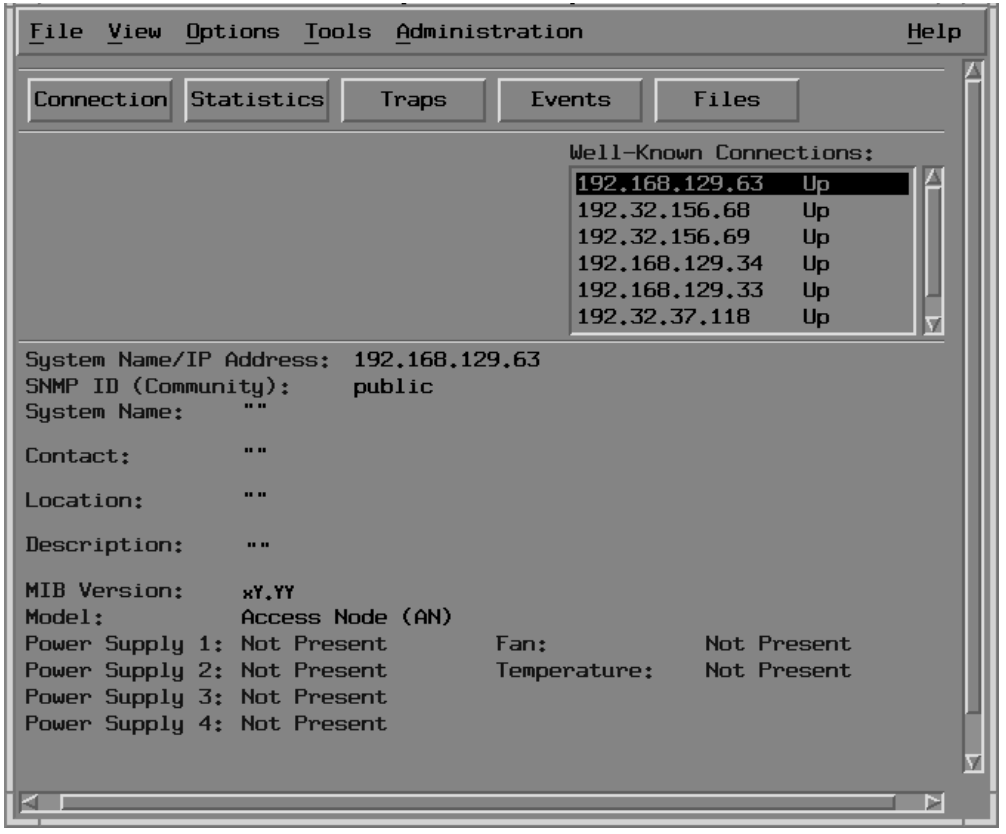

Figure 12-1. Site Manager Window

Starting Site Manager from OpenView

Read this section if you plan to install or are currently running the HP OpenView application on your HP 9000 workstation.

After you install Site Manager on a workstation running HP OpenView, exit HP OpenView and enter **ovw -fields** at the command line to integrate Site Manager with the OpenView application and to update the symbols. Do this instead of using the Update Symbols option on the OpenView Site Manager menu.

To start a Site Manager session from the IP Internet window menu bar in OpenView:

1. **Open a view containing the icon of the router that you want to configure using Site Manager.**

   The IP Internet window opens with a map of your internetwork.

2. **Click on the icon of the router that you want to configure.**

3. **From the Tools menu, choose Site Manager (Figure 12-2).**

   The Site Manager menu opens with a list of tools.

4. **If the Site Manager tools are dimmed, delete the router from OpenView so that it can be rediscovered.**

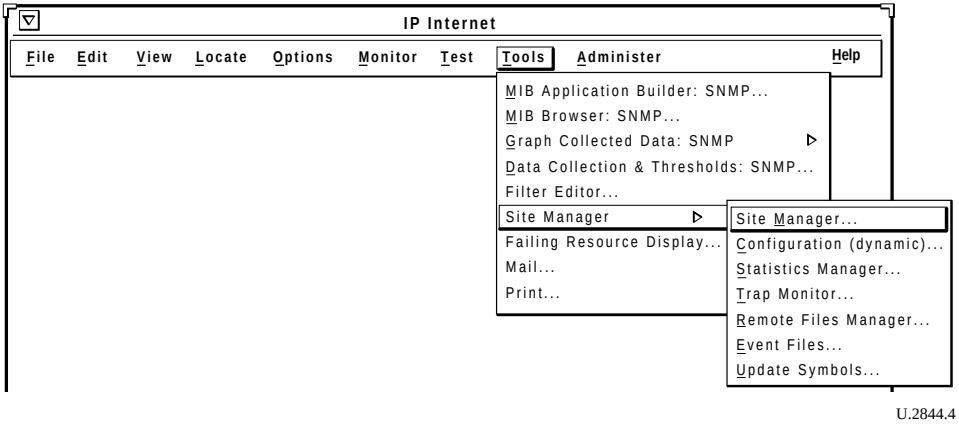

Figure 12-2. Starting a Site Manager Session from OpenView

If you install OpenView *after* you install Site Manager software, follow these steps to integrate Site Manager with the OpenView application:

1. **Change to the */usr/wf* directory.**
2. **Reexecute the Site Manager installation script by entering:**

   . /WFSM_INSTALL

Follow these steps any time that you reinstall OpenView.

Appendix A
Sample Installation Script

This appendix presents a sample execution of the *install.bat* script to add an initial IP router interface to a network. See Chapter 3 for the Quick-Start Worksheet you use to prepare network information before running the script. Your script will vary, depending on your router model and network configuration.

```
--------------------------------------------------------------------------------
                                  Release 14.00
                               Copyright 1993-1999
--------------------------------------------------------------------------------


                                   Introduction
                                   ------------

This part of the Quick-Start procedure configures the initial IP network
interface on the router. You perform this procedure so that the router can
communicate with the network management station.

Each step of this procedure is further described in the Quick-Start Guide. As you
perform the procedure, refer to the Quick-Start Guide for additional helpful
information and examples.

When you are finished with this procedure, the router will be able to communicate
with the network management station over the IP network. You are then ready to
install the network management software, as described in the Quick-Start Guide.

Each procedure step requires you to do one of the following things:
        1. Enter a number that corresponds to a selection.
        2. Enter 'y' for Yes;  'n' for No; 'q' for Quit.
        3. Enter a word or phrase referred to as a "text string."
        4. Enter <Return> to accept default displayed in [].

You must press the [Return] key after entering one of the above responses.
```

```
Press [Return] to Continue, q[Return] to Quit:

------------------------------------------------------------------------------

                    Preliminary Information You Need to Know
                    ----------------------------------------

Before you begin this procedure, you should gather the network information listed
below:

You Need to Know This Information:                For For Example:
---------------------------------                 ------------
Type of Link Module connecting the router's       DSDE
IP network interface to the Site Manager.

Slot number where the Link Module resides.        2

Communication type and connector number           Ethernet XCVR1

IP address of initial IP network interface        192.32.10.189

Subnet mask of initial IP network interface       255.255.255.224

IP address of Site Manager workstation            192.32.10.100

Do you wish to continue? (y/n)[y]: y
------------------------------------------------------------------------------

Step 1. Specify the slot number where the Link Module resides.

             Slot Menu for Link Module
             -------------------------

  Slot       Link Module      Processor Module Daughter Card
  ----       -----------      ---------------- -----------------
    1        SRML             Empty            N/A
    3        QE100BT          FRE4             N/A

Enter the slot number [3]: 3
```

```
--------------------------------------------------------------------------------
Step 2. Specify the Link Module and network interface information for
the initial IP connection to the Site Manager.

Link Module: QE100BT

       Connector Menu
       --------------
       1. XCVR1
       2. XCVR2
       3. XCVR3
       4. XCVR4

Enter connector number [1]:

Line Speed Select
-------------------------
1. Auto Negotiation
2. 10Base-TX Half Duplex
3. 10Base-TX Full Duplex
4. 100Base-TX Half Duplex
5. 100Base-TX Full Duplex
6. 10Base-TX Full Duplex with Flow Control
7. 100Base-TX Full Duplex with Flow Control

Enter Line Speed [1]: 2

Enable Mini-Rmon (y/n) [n]: y

Mini-RMON configuration Loaded on Slot 3

Recommended Circuit Name: E31

Enter circuit name [E31]:

--------------------------------------------------------------------------------
```

```
Step 3. Specify the IP configuration information for the network
interface.

                              IP Configuration Menu
                              ---------------------

IP address format:###.###.###.###

IP subnetwork mask format: ###.###.###.###
Example: 255.255.255.0


Enter IP address in dotted decimal notation: 192.32.125.34


Enter IP subnetwork mask in dotted decimal notation: 225.225.225.0


Is the router connected to the same local area network as the Site Manager
workstation? (y/n)[n]:


Since the router is not on the same network as the Site Manager workstation, an
IP Routing Protocol must be configured in order to manage the box remotely

 IP Routing Protocol Configuration Menu
 --------------------------------------

  1. RIP
  2. OSPF
  3. Static Route to Site Manager.

Enter Routing Protocol Number [1]:


------------------------------------------------------------------------

                                RIP Configuration
                                  Default Route
                                 -----------------

RIP will listen to a specific route to the network or subnet where Site Manager
is located. If you also would like RIP to listen to the default route (0.0.0.0)
then answer 'y' below. The default route is useful when no specific route is
available in the RIP updates received by this router.
```

```
Should RIP listen to the default route? (y/n)[n]:

------------------------------------------------------------------------

                                RIP Configuration
                                   RIP Version
                                -----------------

Specify the version of RIP. The default is to run RIP1. RIP2 runs RIP2 without
the automatic aggregation of subnets that RIP1 provides. RIP2_AGGR provides the
automatic aggregation of subnets for RIP2.

1. RIP1
2. RIP2
3. RIP2_AGGR

Enter Routing Protocol Number [1]:



RIP Configuration Complete

------------------------------------------------------------------------------

                           SNMP Community Management Menu
                           ------------------------------

Setting up SNMP community management is optional.

It allows you to limit control of this router to a single Site Manager
workstation at a given IP address. The default is to allow any Site Manager from
any workstation to manage and to configure the router.

Note: You can later configure this using Site Manager.

Do you wish to set SNMP community management? (y/n)[n]: y

Enter IP address of Site Manager workstation: 192.32.20.12


Enter SNMP management community name [public]:


------------------------------------------------------------------------------
```

```
Step 4. Select TFTP default volume.

                            TFTP Default Volume Menu
                            ------------------------

NVFS File System:

VOL STATE        TOTAL SIZE FREE SPACE CONTIG FREE SPACE
-------------------------------------------------------------
3: FORMATTED       8388608       2677986       2677986

Enter volume number [3]:

TFTP default volume is 3:

-------------------------------------------------------------------------------
Step 5. Select FTP default volume.

                                    FTP Menu
                                    --------

Do you want to enable FTP? (y/n)[n]: y


NVFS File System:

VOL STATE    TOTAL SIZE FREE SPACE CONTIG FREE SPACE
-------------------------------------------------------------
3: FORMATTED  8388608       2677986       2677986

Enter volume number [3]:

FTP default volume is 3:

-------------------------------------------------------------------------------
Step 6. Enable TELNET

                  Enable the Technician Interface via TELNET
                  ------------------------------------------

Do you want to enable TI TELNET? (y/n)[n]: y



TI TELNET enabled.
```

```
--------------------------------------------------------------------------------
Step 7. Enable HTTP

                          Enable the HTTP (Web) Server
                          ----------------------------

Do you want to enable the HTTP (Web) server? (y/n)[n]: y

HTTP server enabled.


--------------------------------------------------------------------------------
                             Configuration Summary
                             ---------------------

Link Module:  QE100BT
Connector:    1
Slot:         5
Circuit Name: E31
IP address:   192.32.125.34
IP subnetwork mask: 225.225.225.0
Routing Protocol: RIP1
Default Rt. Listen: No
TFTP Default Volume: 3:
FTP Default Volume: 3:
TI TELNET:    Yes
HTTP Server:  Yes

Press [RETURN] to continue:


--------------------------------------------------------------------------------
Step 8. Specify a name for the configuration file.

                          Save configuration to a file.
                          -----------------------------

The Quick-Start configuration of the router is now complete and active.

Do you wish to save this configuration to a file? (y/n)[y]:


Default file name is startup.cfg on the current volume.

NOTE: Do *NOT* name this file 'config'. Later, you may wish to rename
this file 'config' after you perform a named boot and verify its operation.
```

```
Enter file name [startup.cfg]:

------------------------------------------------------------------------------
Step 9. Test this initial IP interface configuration.

                                TEST IP Interface
                                -----------------

IP Interface 192.32.125.34 is up.

Testing local IP interface.

ping -IP 192.32.125.34 -r5
IP ping: 192.32.125.34 is alive (size = 16 bytes)
IP ping: 192.32.125.34 is alive (size = 16 bytes)
IP ping: 192.32.125.34 is alive (size = 16 bytes)
IP ping: 192.32.125.34 is alive (size = 16 bytes)
IP ping: 192.32.125.34 is alive (size = 16 bytes)

This test attempts to ping the Site Manager workstation.

NOTE: If routing has not yet converged, an attempt
to ping the Site Manager workstation may fail. If this happens, you may either
enter a new IP address or quit and wait a short period of time and try again from
the TI command line.

Type q[Return] to cancel this test.

Enter IP address of Site Manager workstation: 192.32.20.12

IP Interface 192.32.20.12 is alive.

------------------------------------------------------------------------------

Quick-Start Installation Completed.

Exiting...
```

Appendix B
Sample ATM Installation Script

This appendix presents a sample execution of the *install.bat* script to add an initial IP router interface to an ATM network using a LANE service type. See Chapter 3 for the Quick-Start ATM Worksheet to prepare your network information. Your script will vary, depending on your router model, ATM service type, and network configuration.

```
--------------------------------------------------------------------------------
                                  Release 14.00
                               Copyright 1993-1999
--------------------------------------------------------------------------------

                                  Introduction
                                  ------------

This part of the Quick-Start procedure configures the initial IP
network interface on the router.  You perform this procedure so that
the router can communicate with the network management station.

Each step of this procedure is further described in the Quick-Start Guide.
As you perform the procedure, refer to the Quick-Start Guide for
additional helpful information and examples.

When you are finished with this procedure, the router will be able to
communicate with the network management station over the IP network. You
are then ready to install the network management software, as described
in the Quick-Start Guide.

Each procedure step requires you to do one of the following things:
        1. Enter a number that corresponds to a selection.
        2. Enter 'y' for Yes;  'n' for No; 'q' for Quit.
        3. Enter a word or phrase referred to as a "text string."
        4. Enter [Return] to accept default displayed in [].
```

```
You must press the [Return] key after entering one of the above responses.

Press [Return] to Continue, q[Return] to Quit:
--------------------------------------------------------------------------------

                    Preliminary Information You Need to Know
                    ----------------------------------------

Before you begin this procedure, you should gather the network information listed
below:

You Need to Know This Information:                For Example:
---------------------------------                  ------------
Type of Link Module connecting the router's        DSDE
IP network interface to the Site Manager.

Slot number where the Link Module resides.         2

Communication type and connector number            Ethernet XCVR1

IP address of initial IP network interface         192.32.10.189

Subnet mask of initial IP network interface        255.255.255.0

IP address of Site Manager workstation             192.32.10.100

Do you wish to continue? (y/n)[y]:
--------------------------------------------------------------------------------

Step 1.  Specify the slot number where the Link Module resides.

                      Slot Menu for Link Module
                      -------------------------

 Slot    Link Module        Processor Module
 ----    -----------        ----------------
    1    SRML               Empty
    2    QE/NF              FRE2
    3    DTOK               FRE2
    4    ATMC_OC3MM         ARE
    5    DSDE-1             FRE2

Enter the slot number [2]: 4
```

```
--------------------------------------------------------------------------------
Step 2. Specify the Link Module and network interface information for
        the initial IP connection to the Site Manager.

Link Module: ATMC_OC3MM

Connector Menu
--------------
1. ATM1

Enter connector number [1]:

ATM Service Record Selection Menu
---------------------------------
1. ATM PVC
2. ATM LAN Emulation
3. ATM Logical IP Subnet

Enter ATM Service Record Type [1]: 2

         Configuring LANE ATM Service Record
         -----------------------------------


Enter Signaling Version
-----------------------
1. UNI3.0
2. UNI3.1

Signaling Version [1]: 2


 ATM Signaling UNI3.1 Has Been Enabled
 -------------------------------------------

            ATM Address Configuration
            -------------------------

If you choose Auto Generation, router software will use
combination of MAC address and network prefix queried from server
to generate a unique ATM address.

If you do not choose Auto Generation, please enter a 7-byte
User Part (Mandatory) and a 13-byte Net Prefix (Optional) to
be combined to a 20-byte ATM address.

Do you want Auto Generation of ATM address? (y/n) [y]: n
Please enter ATM address in hex format, omit leading 0x/0X
```

```
Enter User Part (Mandatory), 7 bytes : 1234567765432

Incorrect User Part entered, try again
Please enter ATM address in hex format, omit leading 0x/0X

Enter User Part (Mandatory), 7 bytes : 12345677654321
Enter Net Prefix (Optional), 13 bytes : [] 39000000000000000000000000

Choose Emulated LAN Name.

Press RETURN to accept default ELAN or
type in the name of a previously configured ELAN
into which you wish this LAN Emulation Client to join

Enter Emulated LAN Name, e.g. 01, [DEFAULT]: AAA

Emulated LAN Type Menu
----------------------
1. UNSPECIFIED
2. IEEE8023
3. IEEE8025
-----------------------------------------------------

Choose Emulated LAN Type [1] 3


Recommended Circuit Name: ATMSR_1404101.5

Enter circuit name [ATMSR_1404101.5]:
-------------------------------------------------------------------------------

Step 3.  Specify the IP configuration information for the network
         interface.

                              IP Configuration Menu
                              ---------------------

 IP address format:          ###.###.###.###

 IP subnetwork mask format:  ###.###.###.###
                    Example: 255.255.255.0


Enter IP address in dotted decimal notation: 192.168.125.34

Enter IP subnetwork mask in dotted decimal notation: 255.255.255.0
```

```
Is the router connected to the same local area network as
the Site Manager workstation? (y/n)[n]: y


------------------------------------------------------------------------------

                          SNMP Community Management Menu
                          ------------------------------

Setting up SNMP community management is optional.

It allows you to limit control of this router to a single
Site Manager workstation at a given IP address.  The default
is to allow any Site Manager from any workstation to manage
and to configure the router.

Note: You can later configure this using Site Manager.

Do you wish to set SNMP community management? (y/n)[n]:

------------------------------------------------------------------------------
Step 4.  Select TFTP default volume.

                             TFTP Default Volume Menu
                             ------------------------

 NVFS File System:

VOL    STATE      TOTAL SIZE    FREE SPACE    CONTIG FREE SPACE
-------------------------------------------------------------
 3:    FORMATTED    4194304       3082063          2720387
 4:    FORMATTED   16777216       7433936          6123580

Enter volume number [3]:


TFTP default volume is 3:
```

```
--------------------------------------------------------------------------------
Step 5.  Select FTP default volume.

                                  FTP Menu
                                  --------

Do you want to enable FTP? (y/n)[n]:
--------------------------------------------------------------------------------
Step 6.  Enable TELNET

                  Enable the Technician Interface via TELNET
                  ------------------------------------------

Do you want to enable TI TELNET? (y/n)[n]:


--------------------------------------------------------------------------------
Step 7. Enable HTTP

                          Enable the HTTP (Web) Server
                          ----------------------------

Do you want to enable the HTTP (Web) server? (y/n)[n]: y

HTTP server enabled.


--------------------------------------------------------------------------------


                             Configuration Summary
                             ---------------------

Link Module:         ATMC_OC3MM
Connector:           1
Slot:                4
Circuit Name:        ATMSR_1404101.5
IP address:          192.168.125.34
IP subnetwork mask:  255.255.255.0
TFTP Default Volume: 3:
TI TELNET:           No
HTTP Server:         Yes


Press [RETURN] to continue:

--------------------------------------------------------------------------------
```

```
Step 8. Specify a name for the configuration file.

                          Save configuration to a file.
                          -----------------------------

The Quick-Start configuration of the router is now complete and active.

Do you wish to save this configuration to a file? (y/n)[y]:

Default file name is startup.cfg on the current volume.

NOTE: Do *NOT* name this file 'config'. Later, you may wish to rename
      this file 'config' after you perform a named boot and verify its
      operation.

Enter file name [startup.cfg]:

------------------------------------------------------------------------
Step 9.  Test this initial IP interface configuration.

IP Interface 192.168.125.34 is up.


Testing local IP interface.

ping -IP 192.168.125.34 -r5
IP ping: 192.168.125.34 is alive (size = 16 bytes)
IP ping: 192.168.125.34 is alive (size = 16 bytes)
IP ping: 192.168.125.34 is alive (size = 16 bytes)
IP ping: 192.168.125.34 is alive (size = 16 bytes)
IP ping: 192.168.125.34 is alive (size = 16 bytes)

This test attempts to ping the Site Manager workstation.

NOTE:  If routing has not yet converged, an attempt
       to ping the Site Manager workstation may fail.  If
       this happens, you may either enter a new IP address or
       quit and wait a short period of time and try again from
       the Technician Interface command line.

Type q[Return] to cancel this test.

Enter IP address of Site Manager workstation: 192.32.20.12

IP Interface 192.32.20.12 is alive.
...

The router installation procedure has completed.
```

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